

2BDQ & 2TDQ

-380- -379-

INSTALLATION & OPERATION INSTRUCTIONS

HY-GAIN ELECTRONICS CORPORATION
NE Highway 6 at Stevens Creek • Lincoln, Nebraska 68501

GENERAL DESCRIPTION:

The Hy-Gain Model 2 BDQ is a half-wave length doublet antenna for 40 and 80 meters. Band switching is accomplished automatically through the use of two matched Hy-Gain 40 meter Hy-Q traps. The maximum overall length is only 100' 10 1/2". If the antenna is mounted in an inverted "V" configuration this overall length will be shortened by an amount dependent upon the apex angle.

To improve the already outstanding performance of the 2BDQ it is recommended that you obtain a Hy-Gain balun Model BN-86. The Model BN-86 is an extremely broadband balun designed specifically for doublet type antennas. The balun will balance the input impedance to the antenna and prevent transmission line radiation thereby greatly increasing the efficiency of a doublet type antenna.

The Hy-Gain Model 2 TDQ includes only the traps and connecting hardware necessary for constructing an antenna similar to the 2 BDQ. Simply follow the instructions given in this manual using your own wire and insulators. It is highly recommended that you use Hy-Gain center and end insulators because of their high strength and extreme durability.

THEORY OF OPERATION:

True half wave resonance is realized with the Model 2 BDQ by the use of matched Hy-Gain Hy-Q traps. These traps are tuned at the factory therefore no adjustments are necessary. The traps operate as a high impedance circuit on 40 meters and add to the overall length of the antenna as end loading for 80 and 75 meter resonance. The 40 meter section also functions as 3 half wave lengths on 15 meters.

CONSTRUCTION:

The unique Hy-Q traps are practically indestructible and virtually impervious to all weather conditions. All hardware is indite treated to meet Military Specifications. The center of the doublet is supported with a yoke type center insulator to which the transmission line easily attaches. The ends of the doublet are supported by two end insulators constructed of high impact cycolac plastic. The antenna wire is alumo-weld #12 which has a breaking strength of 1200 pounds. Also, it will not rust or corrode.

SWR AND FEEDLINE:

The 2 BDQ antenna is designed for use with a single 52 ohm coaxial feedline. The SWR at resonance is 1.5:1 or less on both bands. RG-58/U or RG-8/U polyfoam is recommended.

For proper lightning protection it is recommended that you use a Hy-Gain Model LA-1 lightning arrestor. The LA-1 is available at your local Hy-Gain dealer.

MECHANICAL SPECIFICATIONS:

Overall Length.....100' 10 1/2" Max
Maximum Wind Survival..... 80 mph
Antenna Wire.....Alumo-weld #12

ELECTRICAL SPECIFICATIONS:

Frequency Range.....40 and 80 meters
Input Impedance.....52 ohms unbalanced
SWR at resonance.....Less than 1.5:1
Maximum Power..... 1 KW

-- IMPORTANT--READ CAREFULLY--

INSTALLATION:

Suspend the antenna by attaching the end insulators to a STABLE structure. The center insulator may be supported by the antenna itself or suspended from a support. When suspending the center insulator from a support, be sure to keep the insulator from contacting any of the supporting structure. For proper operation of this antenna the center insulator should be about 46 feet above the ground. The higher the antenna the better the operation.

It is extremely important that the antenna be mounted in the CLEAR. Detrimental effects of surrounding objects is often underestimated in the average antenna installation. In particular, power lines and other metal objects of considerable length or mass will deteriorate the performance of any antenna. When installing the antenna, keep the two halves balanced with respect to ground and surrounding objects. Also, do not attempt to remove all the sag or tremendous strain will be developed which could cause mechanical failure. A few feet of sag in the antenna wire will not harm the performance of the 2 BDQ either mechanically or electrically.

The Model 2BDQ may be mounted in the inverted "V" configuration as shown by the drawings inside this manual. Care must be taken, however, to insure that the ends of the antenna are at least 16 feet above the ground. Also, keep the antenna balanced, that is, anything you do to one end must also be done to the other end or serious deterioration in performance will result. One advantage of the inverted "V" is that you can more nearly match the antenna impedance to the transmission line impedance. A directional pattern, in the direction of the slant, will result, if angle "A" (as shown in Figure 7) exceeds 35 degrees.

STEP-BY-STEP ASSEMBLY:

() Assemble the center insulator as shown in Figure 2. First place one half of the insulator on a flat surface with the inside facing up. Assemble hardware on the eyebolts and place in the insulator. Now, strip the coax and separate the center conductor from the braid. Solder the braid to one solder lug and solder the center conductor to the opposite solder lug. For smaller coax a reducing sleeve is provided. Apply silicone grease, vasoline, etc. (not supplied) to the mating halves, place together and secure using the 6-32 x 3/8" screws (14 in all). Hold the eye bolt from turning and tighten the 1/4" nuts on the outside first one side then the other.

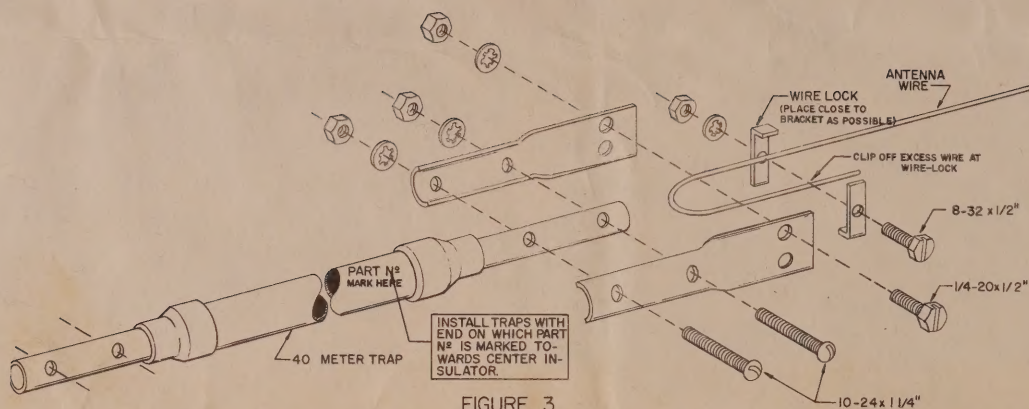


FIGURE 3

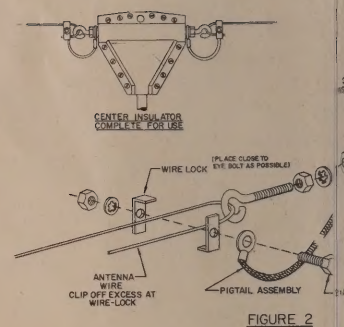
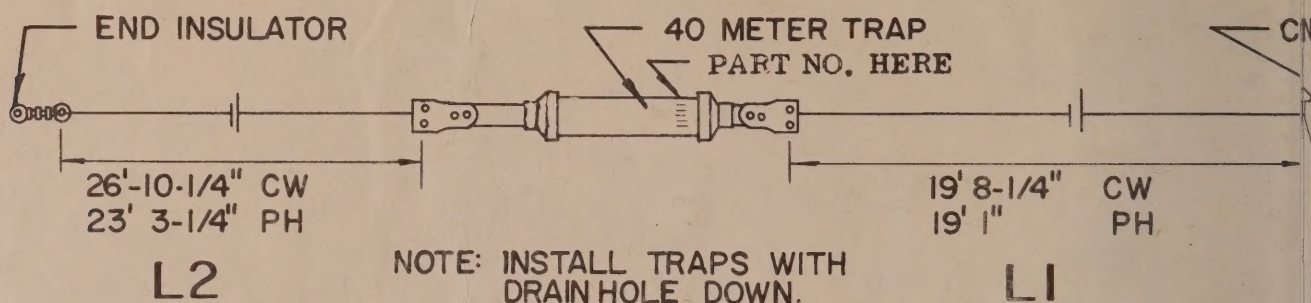


FIGURE 2



NOTE: INSTALL TRAPS WITH DRAIN HOLE DOWN. IF ANTENNA IS MOUNTED IN AN INVERTED V IT IS RECOMMENDED THAT YOU REMOVE TRAP CAP FROM END OF TRAP NEAREST THE GROUND TO ALLOW FOR PROPER DRAINAGE.

FIGURE 4

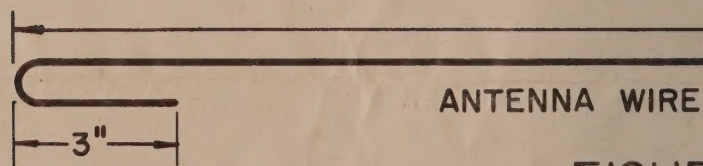


FIGURE 5

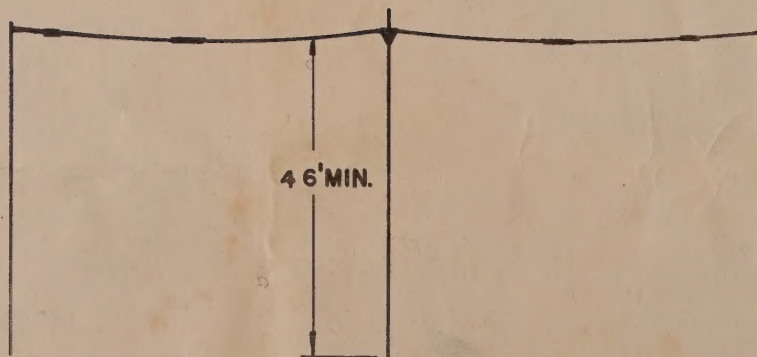


FIGURE 6

46' MIN. H. OF CENTER BE LESS

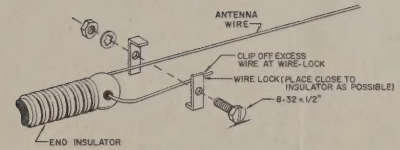
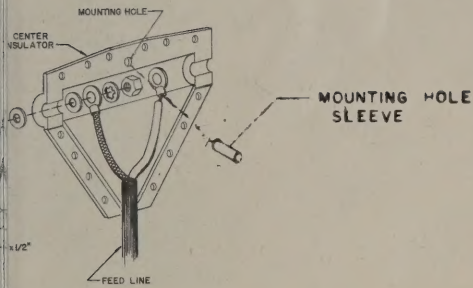
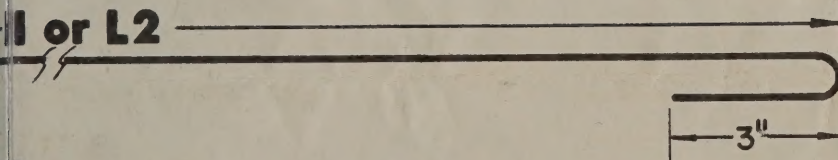
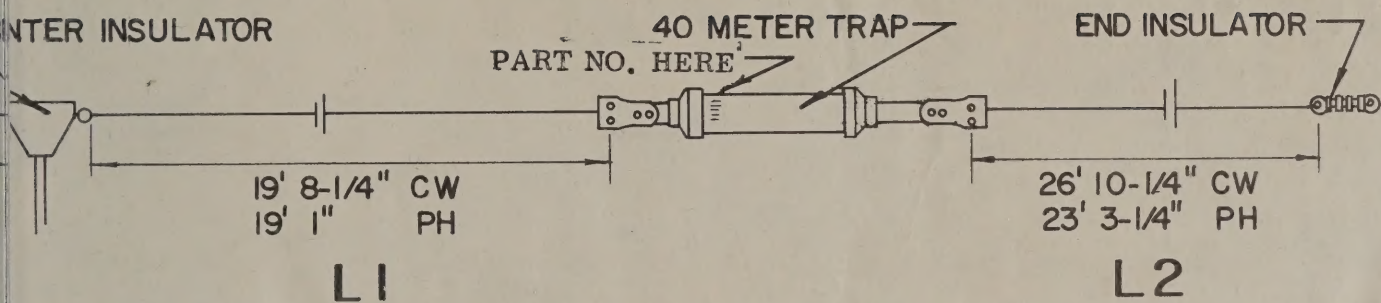
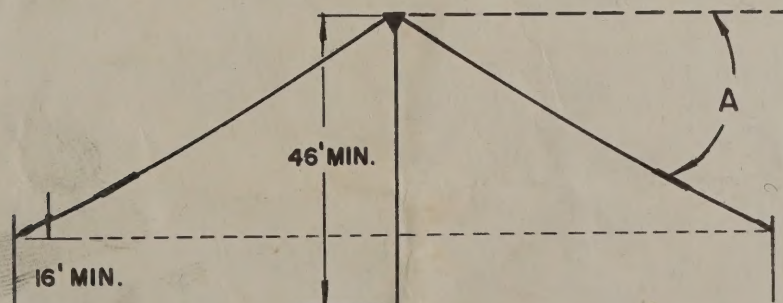


FIGURE 5



RECOMMENDED HEIGHT
PER INSULATOR. CAN
BE NECESSARY.



IF ANGLE "A" BECOMES GREATER THAN
35° THE ANTENNA WILL BE DIRECTIONAL

FIGURE 7

NOTE

Since both sides of the antenna are exactly the same, each of the following steps must be done first for one side then repeated for the other side.

() Cut the 40 meter wire (L1) to either Phone or CW dimension as shown on the inside of this manual. Add an extra 3 inches on each end for attaching to the center insulator and 40 meter trap. Example: L1 length for CW operation is 19' 8 1/4". Add 6 inches which makes a total length of 20' 2 1/4". Each insulator or trap requires 3 inches for proper attachment.

NOTE

Once you have selected your mode of transmission (Phone or CW) you must use the same mode for all dimensions.

() Attach one end of the wire (just cut) to the center insulator using the wire locks as shown in Figure 2. Do not forget to connect the pigtail to the wire lock.
 () Clip off all excess wire extending past the wire lock.
 () Select the 40 meter trap and the trap connector clamps. Assemble the clamps on both ends of trap using the 10-24 x 1 1/4" screws, nuts and lockwashers as shown in Figure 3.
 () Carefully re-measure the antenna wire connected to the center insulator and bend the wire for attachment to the 40 meter trap as shown in Figures 1 and 4.
 () Connect the wire to the trap using the wire locks as shown in Figure 3. Clip off all excess wire extending past the wire lock.

NOTE

Make certain that end of trap which has small metal screw is pointed in the direction of the center insulator as shown in Figures 1 and 3. This is very important for proper operation of the antenna.

() Cut the 80 meter antenna wire (L2) to the length shown for your mode of transmission (Phone or CW). Do not forget to allow an extra 3 inches on each end for attachment to the 40 meter trap and end insulator.
 () Bend one end of the wire and attach to 40 meter trap as shown in Figures 3 and 4. Do not forget to clip off the excess wire extending past the wire lock.
 () Carefully re-measure wire and bend for attachment to the end insulator.
 () Attach wire to end insulator as shown in Figure 5. Clip off all excess wire extending past the wire lock.
 () The antenna is now ready to be mounted in either the horizontal or inverted "V" configuration. Refer to drawing inside this manual for proper dimensions. When suspending the end insulators non-metallic line is preferred. If you do use wire it must be broken up every 6 feet with strain-insulators to prevent harmful effects to your radiation pattern.

PARTS LIST For Model 2BDQ (380)

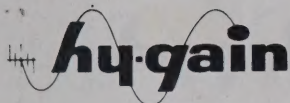
Part No.	Description	Qty
691067	Wire, # 12 Alumo-weld, 100 Ft.	1
861021	End Insulator	2
877234	Trap, 40 meter	2
877233	Parts Pack, 2 BDQ	1
465460	Insulator, Center	2
167236	Trap Connector Clamp	8
167238	Wire Lock	16
465570	Coax Bushing	1
506382	Screw, 1/4-20 x 1/2" HH	4
506450	Screw, 10-24 x 1 1/4" RH	8
509234	Screw, 8-32 x 1/2"	8
506680	Screw, 6-32 x 3/8"	14
547260	Eyebolt	2
556990	Nut, 8-32 Hex	8
556960	Nut, 1/4-20 Hex	8
556970	Nut, 10-24 Hex	8
557000	Nut, 6-32 Hex	14
567110	Lockwasher, 1/4"	8
567120	Washer, Flat, 1/4"	4
567125	Lockwasher,	8
567135	Lockwasher, #8	8
677555	Solder Lug	2
878446	Pigtail Assembly	2
171586	Sleeve	1

PARTS LIST For Model 2TDQ (379)

Part No.	Description	Qty
877234	40 Meter Trap Assembly	2
871927	2 TDQ Parts Pack	1
167236	Doublet Bracket	8
506382	Screw, 1/4-20 x 1/2"	4
506450	Screw, 10-24 x 1 1/4"	8
556960	Nut, 1/4-20 Hex	4
556970	Nut, 10-24 Hex	8
567110	Lockwasher, 1/4" Internal	4
567125	Lockwasher, #10	8

PN 805724

Printed in USA



ORDER NO.

242

BN-86 BALUN

INSTALLATION & OPERATION INSTRUCTIONS

HY-GAIN ELECTRONICS CORPORATION
Rural Route 3 Lincoln, Nebraska 68505

DESCRIPTION

This balun is a ferrite, balanced to unbalanced, antenna matching device capable of handling power levels never before possible with previously designed baluns. With a transformation ratio of 1-1, the balun will couple into any 52 ohm balanced system such as dipoles, multiband doublets and beam antennas.

CAUTION

Do not use this balun with any matchboxes antenna tuners trans-matches or other such device. When the balun is used with such a device, out of resonance operation causes the break-down voltage of the balun to be exceeded. This is due to the extremely high standing wave voltage present on the feedline.

INSTALLATION

It will mount on either a boom or mast with diameters of 1 3/8" to 2 3/8". To install the Model 242 proceed as follows:

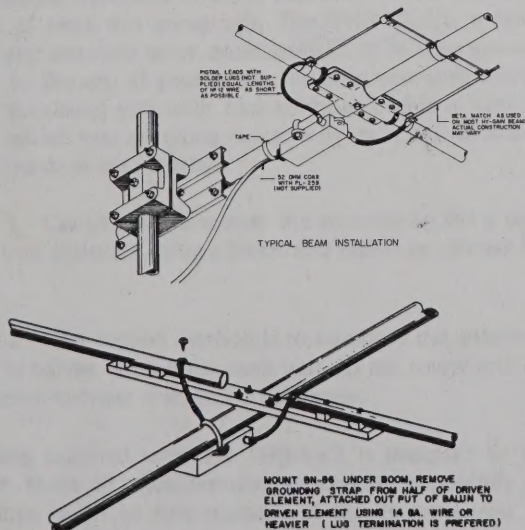
1. Place U-bolt around mast or boom.
2. Place balun against mast or boom, inserting U-bolt through holes on sides of balun.
3. Tighten nuts securely.
4. Connect leads to driven element.
5. Connect coax to receptacle on balun.

NOTE

Fasten the balun as close as possible to the driven element. Leads from the two terminal outputs to the driven element should not exceed either 7" or existing lengths of the coax leads. Longer lengths will lower the resonant frequency of the antenna system.

To install the balun in a doublet system proceed as follows:

1. Insert 2 eyebolts in brass fittings at top of balun.
2. Hook doublet wires to eyebolts (the balun replaces the insulator completely).
3. Connect coax to receptacle on balun.



NOTE

An ohm meter check of the balun at all points will show a DC short. THIS IS NORMAL. This is not a short with respect to RF energy at the balun's design frequency.

The coaxial connection should be weatherproofed with some material such as neoprene.

Mechanical Specifications

Weight.....	1 lb.
Dimensions.....	3 1/4 x 6 1/4"
Input Receptacle.....	SO 239
Output Receptacle.....	Standard terminal lugs
Weather Protection.....	Weatherproof housing with condensation drain opening
Housing Material.....	High Impact Injection Molded, Cyclocac Plastic

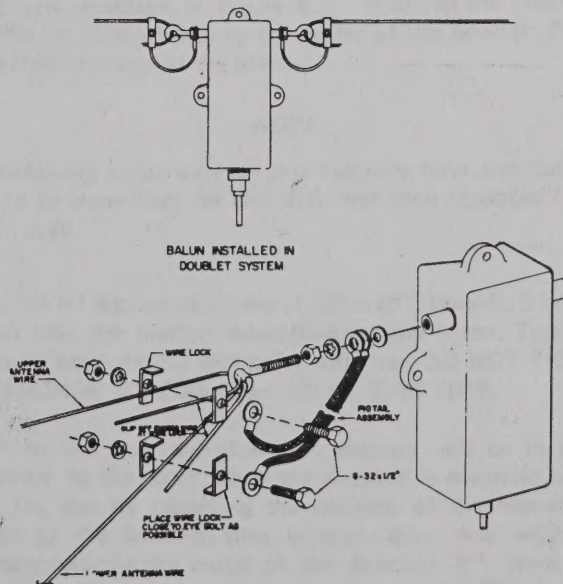
Electrical Specifications

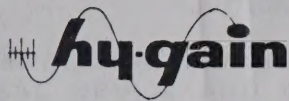
Impedance.....	52 ohms
Frequency Range.....	3 to 30 MHz
Insertion Loss.....	Negligible
Power Handling Capabilities.....	2 KW PEP

PARTS LIST

Description	Part No.	Qty
Balun Assembly	873424	1
Parts Pack	873466	1
U-Bolt, 10-24 x 2 1/2 x 2 3/4"	541363	1
Eyebolt, 1/4-20	547260	2
Nut, 1/4-20 Hex	556960	4
Nut, 10-24 Hex	556970	2
Lockwasher, 1/4"	567110	4
Screw, 1/4-20 x 3/8" Hex	506890	2

PN 804217





ORDER NO.
388/A

INSTALLATION & OPERATION INSTRUCTIONS

THUNDERBIRD

HY-GAIN ELECTRONICS CORPORATION
Rural Route 3 Lincoln, Nebraska 68505

GENERAL DESCRIPTION:

The Hy-Gain Model TH3-Mk3 is a 3 element tri-bander designed for operation on 10, 15 and 20 meters. Multi-banding is accomplished through the use of Hy-Gain's all new Hy-Q traps. The antenna is designed to fit a 1 5/8" OD mast and can be rotated with a heavy duty TV rotator.

SPECIFICATIONS:

Electrical:

Input Impedance.....	52 ohms
Gain.....	8db min.
Front-to-Back Ratio.....	20-25 db
Maximum Power Input.....	1 KW AM
VSWR (at Resonance).....	1.2:1
Lightning Protection.....	DC Ground

Mechanical:

Boom Length.....	14 ft.
Boom Diameter.....	2 in.
Longest Element.....	26 ft.
Maximum Wind Survival.....	80 mph
Net Weight.....	36 lbs.
Accepts Mast.....	2 1/2" to 1 1/4" OD
Wind Surface Area.....	3.4 sq. ft.
Wind Load (80 mph).....	85 lbs.

PREPARATION FOR ASSEMBLY:

Before leaping headlong into the assembly of this antenna, take a moment to read this paragraph. The TH3-Mk3 is a fairly large antenna and requires some consideration as to how you are going to get it to the top of your tower. To help you with this problem we have furnished you with two methods and it is best that you consider which you are going to use now, as it will determine how you put the antenna together.

Method 1 - Completely assemble the antenna on the ground then hoist it into position using a block and tackle as shown in Figure No. 1.

Method 2 - The second method is to assemble the antenna on the ground in halves, then hoist each half up the tower and assemble in the boom-to-mast bracket on the tower.

All tubing supplied with the TH3-Mk3 is designed to telescope together. Make all measurements as accurate as possible using the dimensions given in this manual. If this is done you will gain optimum results from your antenna.

CAUTION

WHEN UNPACKING YOUR ANTENNA. CHECK THE INSIDE OF ALL TUBING FOR PARTS (CLAMPS, INSULATORS, SMALLER TUBING, ETC). TO CONSERVE SPACE THESE SMALLER ARTICLES ARE SOMETIMES PUT INSIDE LARGER PIECES.

ASSEMBLY OF THE BOOM

Select the brackets, cast aluminum, the clamp, boom-to-bracket, and the Bracket, casting-to-boom and the two boom sections (2 x 84"). Slip the drilled end of each boom section into the boom-to-mast bracket and line up the holes. Secure the boom to the bracket using the two 5/16-18 x 2 3/4" screws, nuts and lockwashers provided. DO NOT tighten the screws at this time. The bracket must be loose to enable you to mount the antenna to the mast.

NOTE

The Boom-to-Mast bracket has a hole drilled in it for connecting to the mast. Before the antenna has been completely assembled and attached to the mast, drill a 3/8" hole in the mast corresponding to the hole in the bracket.

ASSEMBLY OF THE REFLECTOR ELEMENT:

LOOSELY assemble a set of element-to-boom brackets on one end of the boom as shown in Figures 5 and 4. Do not forget the 1/4-20 x 1/2" taper point anchor screws with their associated square nuts as shown in Figure 4. Position the bracket 2" from the tip of the boom to the center of the bracket. This will be the Reflector end of the boom.

NOTE

The following steps will be in a singular form and they will have to be done first for one side and then repeated for the other side.

Select the R1 section of tubing (1 1/4 x 48", Item 4). Slip the R1 section into the bracket assembled on the boom. Tighten the screws to hold the R1 section securely but DO NOT TIGHTEN THE ANCHOR SCREWS (Item 33) AT THIS TIME.

Check to see that the Reflector element will lie in a plane horizontal to the earth when the antenna is mounted on your mast. Do this by observing the position of the element with respect to the boom-to-mast bracket. Make any adjustments necessary keeping the center of the bracket 2" from the tip of the boom then tighten the anchor screws SECURELY.

CAUTION

THE COMPRESSION CLAMPS FURNISHED ARE A UNIVERSAL DEVICE AND MUST BE APPLIED AS BELOW. DO NOT OVERTIGHTEN. CARE SHOULD BE USED WHEN MEASURING THE TUBING LENGTHS: THE COMPRESSION CLAMPS WILL INDENT BOTH TUBES MAKING READJUSTMENT DIFFICULT. THE CLAMP IS PLACED NEAR THE END OF THE TUBE, WITH THE SCREW 180 DEGREES FROM THE SLOT. IT SHOULD BE TIGHTENED UNTIL THE INNER TUBE CANNOT BE TURNED WITHIN THE OUTER TUBE. ONE HALF TO THREE QUARTER FURTHER TURN ON THE COMPRESSION SCREW BEYOND THIS POINT WILL PROVIDE A SECURE ELECTRICAL AND MECHANICAL CONNECTION. WHEN READJUSTMENT OR DISASSEMBLY BECOMES NECESSARY THE TUBES CAN BE SEPARATED BY REMOVAL OF THE CLAMP. IF THE SCREW HAS BEEN OVERTIGHTENED, IT WILL BE NECESSARY TO FIRST DRILL OUT THE INDENT WITH A SHARP 1/4" DRILL BIT. THE TUBES CAN THEN BE SEPARATED AND THE COMPRESSION CLAMP REINSTALLED.

Assemble a 1 1/4" compression clamp and slip it onto the R1 section. Refer to Figure 7. Select the R2 section (1 1/8 x 48", Item 7). Slip the unswaged (untapered) end of the R2 section into the R1 section and measure dimension B for your mode of transmission (phone or CW) as shown in Figure 5, then tighten the compression clamp LIGHTLY.

NOTE

Determine at this time which mode of transmission you wish to favor, either phone or CW. The illustrations show dimensions for both but you must use only one mode throughout the assembly of this antenna. If you should attempt to use phone dimension on one band and CW dimension on another band the antenna will not give optimum results. The typical VSWR chart shown in Figure 6 will help you decide which mode is best for your particular application.

Assemble a 1" compression clamp and slip it onto the swaged end of the R2 section. Select the 10 meter trap (878749, Item 16) and slip the SHORTED end into the R2 section. Measure dimension C for your mode of transmission as shown in Figure 5. Make certain the drain holes in the traps are facing downward.

CAUTION

THE TRAPS WILL NOT OPERATE PROPERLY UNLESS THE SHORTED END IS FACING TOWARDS THE BOOM. THE SHORTED END CAN BE IDENTIFIED BY THE PART NUMBER MARKING, NEAR THE PLASTIC INSULATOR. THE END ON WHICH THE PART NUMBER IS MARKED IS THE SHORTED END. SEE FIGURE 5.

Assemble two 1" compression clamps and slip them onto the R3 section (1 x 5", Item 13). Now slip the R3 section over the 10 meter trap then slip the SHORTED end of the 15 meter parasitic trap (878694, Item 15) into the R3 section. Make certain the shorted end of the trap (identified by the part number) is inserted into the R3 section. Measure dimension D for your mode of transmission as shown in Figure 5, keeping the R3 section approximately equidistant from the two traps. Make certain the

drain holes in the trap are facing downward. Now tighten the compression clamps LIGHTLY.

CAUTION

THERE ARE TWO STYLES OF 15 METER TRAPS. PART NO. 878694 IS A PARASITIC TRAP AND IS USED ON THE REFLECTOR AND DIRECTOR. PART NO. 878637 IS FOR USE ON THE DRIVEN ELEMENT.

Assemble a 11/16" compression clamp and slip it over the swaged end of the 15 meter trap. Select the R4 section (7/16 x 28", Item 11) and slip it into the 15 meter trap. Measure dimension E for your mode of transmission as shown in Figure 5, then tighten the compression clamp LIGHTLY.

Carefully recheck all measurements and make certain the shorted end of all traps are pointed towards the boom. Now tighten all compression clamps until snug. Do not compress tubing too much or elements cannot be telescoped if you want to change settings later.

ASSEMBLY OF THE DRIVEN ELEMENT:

Select the larger set of element-to-boom brackets (Item 6) LOOSELY assemble on the boom 72 3/4" from the center of the Reflector element-to-boom bracket to the center of the Driven Element-to-Boom bracket as shown in Figure 5. Do not forget the anchor screws as shown in Figure 4.

Select the DE1 section of tubing (1 1/4 x 48", Item 4) and the element insulators (Item 54) from the parts package. Slip the insulator over the DE1 section then slip the insulated end of DE1 into the bracket assembled on the boom. Tighten the screws to hold the element securely but DO NOT TIGHTEN THE ANCHOR SCREWS (ITEM 33) AT THIS TIME. Refer to Figure 4.

Check to see that the Driven Element will lie in the same plane as the Reflector and make certain it is still 72 3/4" from the center of one bracket to the center of the other. Now tighten the anchor screws SECURELY.

Assemble a 1 1/4" compression clamp and slip it over the DE1 section. Select the DE2 section (1 1/8 x 38", Item 9). Slip the unswaged end of the DE2 section into the DE1 section and measure dimension G for your mode of transmission as shown in Figure 5. Now tighten the compression clamp LIGHTLY.

Assemble a 1" compression clamp and slip it over the swaged end of the DE2 section. Select the 10 meter trap (878749, Item 16) and slip the SHORTED end (identified by the part number) into the DE2 section. Measure dimension H for your mode of transmission as shown in Figure 5. Make certain drain holes in trap are facing downward. Now tighten the compression clamp LIGHTLY.

Assemble two 1" compression clamps and slip them over the DE3 section (1 x 6", Item 12). Now slip the DE3 section over the 10 meter trap then slip the SHORTED end of the 15 meter Driven Element trap (878637, Item 14) into the DE3 section. Make certain the shorted end of the trap (identified by the part number) is slipped into the DE3 section. Measure dimension I for your mode of transmission as shown in Figure 5, keeping the DE3

section approximately equidistant from the two traps. Now tighten the compression clamps LIGHTLY.

Assemble a 11/16" compression clamp and slip it over the swaged end of the 15 meter DE trap. Select the DE4 section (7/16 x 28", Item 11) and slip it into the swaged end of the 15 meter DE trap. Measure dimension J for your mode of transmission as shown in Figure 5 then tighten the compression clamp LIGHTLY.

Carefully recheck all measurements as shown in Figure 5 and make certain that the shorted ends of the traps are pointed towards the boom and the trap drain holes are facing downward. Now tighten all compression clamps SECURELY.

INSTALLATION OF THE BETA MATCH:

Select the Beta Match tubes (3/4 x 46", Item 10) and the Beta support insulators and clamps as shown in Fig. 8. Assemble the Beta Match tubes on the boom as shown in Figures 5 and 8.

Select the Beta Match shorting clamps and the shorting strap and assemble as shown in Figure 8. Notice that the 10-24 x 1 1/2" screw attaching the shorting clamps to the strap has a sleeve slipped over it. This allows you to install the shorting clamps without putting undue strain on the Beta Match tubes.

Install the pigtail assemblies (Item 55) on the Beta Match tubes using the two No. 10 metal screws (Item 32) and lockwashers (Item 42). Slip the 1 1/4" tubing clamps on the Driven Element near the insulator. LOOSELY attach the pigtails to the tubing clamps using the 1/4-20 x 1 1/2" screws as shown in Figure 8. DO NOT tighten the connection at this time. The coaxial feedline will connect to this point in a later step.

ASSEMBLY OF THE DIRECTOR ELEMENT:

Select the remaining set of element brackets (Item 5) and loosely assemble on the boom 91 3/4" from the center of the Driven Element-to-Boom bracket to the center of the Director Element-to-Boom bracket. Refer to Figures 5 and 4. Do not forget the taper point anchor screws as shown in Figure 4.

Select the D1 section of tubing (1 1/4 x 48", Item 4). Insert the D1 section into the bracket assembled on the boom. Tighten the screws to hold the element securely but DO NOT TIGHTEN THE ANCHOR SCREWS (ITEM 33) AT THIS TIME.

Carefully recheck the 91 3/4" measurement from the center of the Driven Element bracket to the center of the Director element bracket. Make certain that the Director element lies in the same plane as the other elements then tighten the anchor screws SECURELY.

Assemble a 1 1/4" compression clamp and slip it over the D1 section. Select the D2 section (1 1/8 x 38", Item 9). Slip the unswaged end of D2 into the D1 section and measure dimension L for your mode of transmission as shown in Figure 5. Now tighten the compression clamp LIGHTLY.

Assemble a 1" compression clamp and slip it over the swaged end of D1. Select the 10 meter trap (878749, Item 16) and slip the shorted end (identified by the part number) into the D2 section. Measure dimension M for your mode of transmission as shown in Figure 5. Make certain the trap drain holes are facing downward then tighten the compression clamp LIGHTLY.

Assemble two 1" compression clamps and slip them over the D3 section (1 x 6", Item 12). Now slip the D3 section over the 10 meter trap then slip the SHORTED end of the 15 meter parasitic trap 878694 Item 15 into the D3 section. Make certain the shorted end of the trap (identified by part number) is inserted into the D3 section. Measure dimension N for your mode of transmission as shown in Figure 5, keeping D3 approximately equidistant from the two traps. Now tighten the compression clamps LIGHTLY.

Assemble a 11/16" compression clamp and slip it over the swaged end of the 15 meter trap.

Select the D4 section (7/16 x 28", Item 11) and slip it into the swaged end of the 15 meter trap. Measure dimension O for your mode of transmission as shown in Figure 5 and then tighten the compression clamp LIGHTLY.

Carefully recheck all measurements as shown in Figure 5 and make certain that the shorted ends of the traps are pointed towards the boom and the trap drain holes are facing downward. Now tighten all compression clamps SECURELY.

FINAL ASSEMBLY:

Place a 7/16" caplug on each element tip and a 2" caplug on each end of the boom.

Wind yourself an RF choke using RG-8/U coaxial feedline as shown in Figure 8. The choke must consist of 12 turns with a 6" diameter. Strip one end of the choke as shown in Figure 8 and connect to the tubing clamps on the Driven Element. Tape the choke securely to the boom and weatherproof the connection to the Driven Element using Pli-O-Bond, Neoprene or some similar substance. The choke is necessary to keep unbalanced currents from flowing down the coax and decreasing the efficiency of the antenna.

NOTE

In place of the RF choke it is recommended that you obtain a Hy-Gain balun Model BN-86 available at your local Hy-Gain dealer. The BN-86 will allow the TH3-Mk3 to operate with an efficiency far greater than is possible with a "home-made" choke.

Your TH3-Mk3 is now ready to be installed on your 1 5/8" OD mast. Use one of the two methods explained in the beginning of this section. When the completed antenna is mounted be certain to pin the bracket to the mast as explained previously, then tape the coaxial feedline to the mast every 6 inches using waterproof tape.

For lightning protection and to insure noise-free reception, ground the base of your tower using a 1/2" x 8' ground rod driven into the ground as close to the base of the tower as possible. Attach the tower to the ground rod using No. 8 or larger copper or aluminum wire. For a total protection of your equipment from lightning it is recommended that you obtain a Hy-Gain Model LA-1 Lightning Arrestor.

THIS COMPLETES YOUR INSTALLATION OF THE
TH3Mk3, HAPPY DXING.

PARTS LIST

Item	Description	Qty.	Item	Description	Qty.
			29	Screw, 10-24 x 1/2"	2
1	Cast Aluminum Bracket	2	30	Screw, 5/16-18 x 2 3/4"	2
2	Clamp, Boom to Bracket	1	31	Screw, 1/4-20 x 2 3/4"	1
3	Bracket, Casting to Boom	1	32	Screw, 10-24 x 1/2"	2
4	R1, DE1, D1, 1 1/4 x 48"	6		Type A	
5	Element-to-Boom Bracket No. 13	4	33		
6	Driven Element-to-Boom Bracket No. 14	2	34	Nut, 10-24 Square	6
7	R2, 1 1/8 x 48" Swg 7/8"	2	35	Nut, 5/16-18	9
8	Boom Section, 2 x 84"	2	36	Nut, 1/4-20	33
9	DE2, D2, 1 1/8 x 38" Swg 7/8"	4	37	Nut, 10-24	9
10	Beta Rods, 3/4 x 46"	2	38	Nut, 1/4-20 Square	30
11	D4, DE4, R4, 7/16 x 28"	6	39	Lockwasher, 5/16" Split	7
12	D3, DE3, 1 x 6"	4	40	Lockwasher, 5/16" Int.	2
13	R3, 1 x 5"	2	41	Lockwasher, 1/4" Int.	57
14	Trap, 15 meter Driven Element	2	42	Lockwasher No. 10	10
15	Trap, 15 meter parasitic	4		Parts Pack B (872090)	
16	Trap, 10 meter	6	43	Clamp, Compression, 11/16"	6
17	Parts Pack A	1	44	Clamp, Compression, 1 1/4"	6
18	Parts Pack B	1	45	Clamp, Compression, 1"	18
19	Parts Pack C	1	46	Clamp, Tubing, 1 1/4"	2
	Parts Pack A (873876)		47	Clamp, Beta Shorting, 2" ID	1
			48	Clamp, Beta Shorting	2
			49	Clamp, Beta Support	2
20	Beta Match Shorting Sleeves	1			
21	Screw, 10-24 x 3/8"	6		Parts Pack C (872089)	
22	Screw, 5/16-18 x 3 1/2	3			
23	Screw, 5/16-18 x 5"	4	50	Caplug 2"	2
24	Screw, 1/4-20 x 3/4"	28	51	Caplug, 7/16"	6
25	Screw, 1/4-20 x 3/8"	30	52	Insulator, Beta Tube	2
26	Screw, 1/4-20 x 1 1/2"	3	53	Insulator, Beta Support	2
27	Screw, 10-24 x 1 3/4"	4	54	Insulator, DE to Boom	2
28	Screw, 10-24 x 1 1/2"	1	55	Pigtail Assembly	2

WARRANTY

Hy-Gain Electronics Corporation warrants each new product manufactured to be free from defects in material and workmanship and agrees to remedy any such defect, or to furnish a new part, in exchange for any part of any unit which under normal installation, use, and service discloses such defect within ninety days from the date of purchase by original owner.

This warranty does not extend to any of our products which have been subjected to mis-use, neglect, accident, incorrect wiring not our own, improper installation or to use in violation of instructions furnished by us. Nor does it extend to units which have been repaired or altered outside of our factory nor to accessories used therewith not of our own manufacture.

Hy-Gain Electronics Corporation reserves the right to make any changes deemed necessary or desirable without advance notice or incurring any obligation to make like changes in units previously manufactured or sold.

This warranty does not cover transportation or installation costs that may be incurred. Hy-Gain Electronics Corporation's sole liability is the remedy of any defect for ninety days. Hy-Gain Electronics Corporation is not responsible for personal injury or property damage resulting from improper or careless installation or usage not intended by the manufacturer.

No person is authorized to assume for us any other liability in connection with the sale of our products.

All warranties are void and terminated one year after the last unit of its type and design has been manufactured by us.

Service Arrangements

All claims of defect or shortage should be addressed to:

Hy-Gain Electronics Corporation
Attention: Customer Service Department
R. R. #3
Lincoln, Nebraska 68505

You must furnish model number, date, place and proof of purchase, such as a copy of the sales receipt to establish warranty. Your letter should include all pertinent details along with part or item numbers involved. Do not return anything until requested to do so. No warranty card is furnished. You must supply the above information.

Any returned items must have prior authorization. Unexpected returns are greatly delayed in handling. These delays can be avoided by writing in advance furnishing the above information.

WARNING

WHEN INSTALLING YOUR SYSTEM, EXTREME CARE SHOULD BE TAKEN TO AVOID ACCIDENTAL CONTACT WITH POWER LINES AND OTHER OVERHEAD OBSTRUCTIONS BY ANY LADDER OR OTHER INSTALLATION EQUIPMENT. FAILURE TO EXERCISE THIS CARE COULD RESULT IN SERIOUS INJURY.

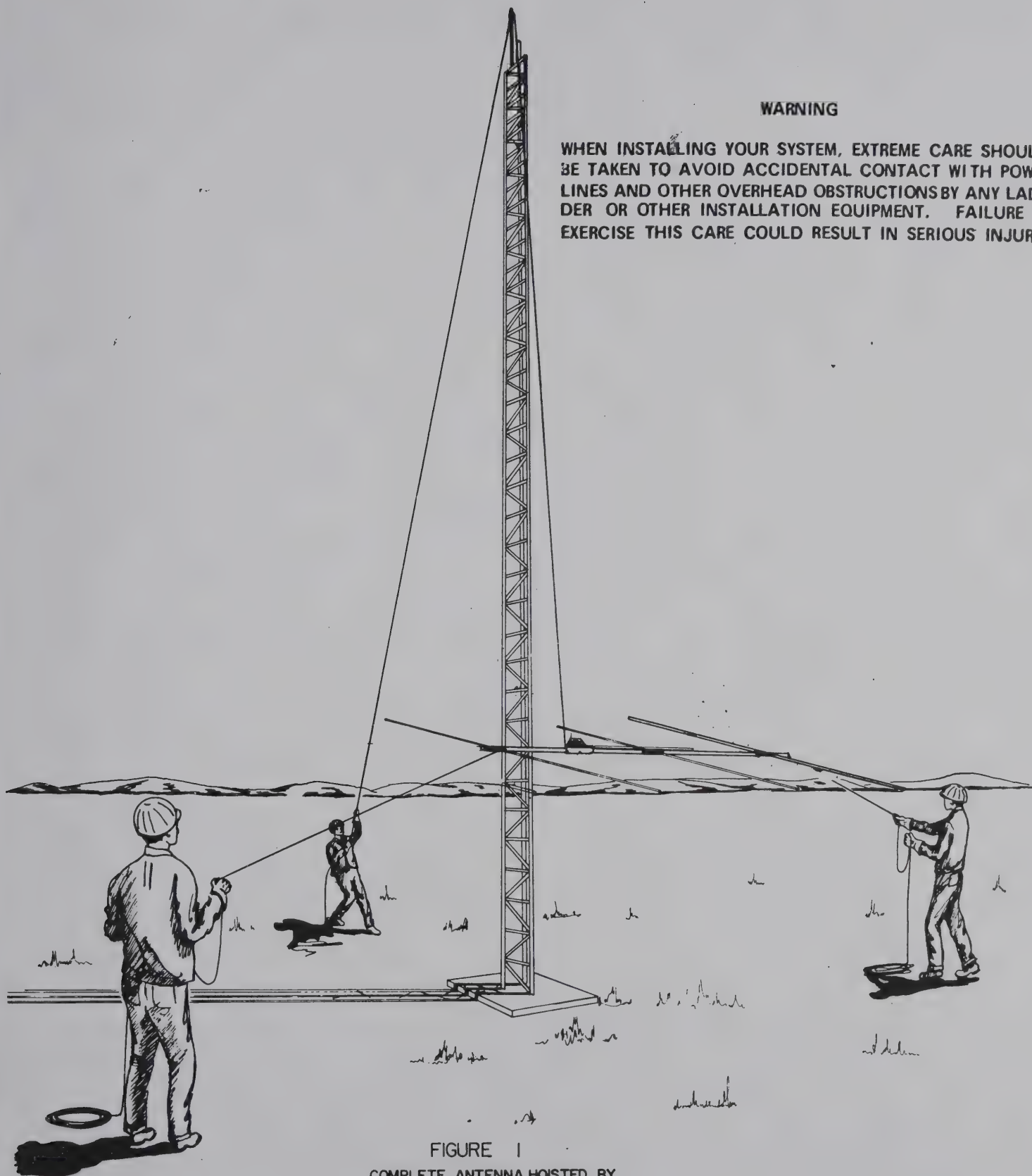


FIGURE 1
COMPLETE ANTENNA HOISTED BY
CABLE OR ROPE

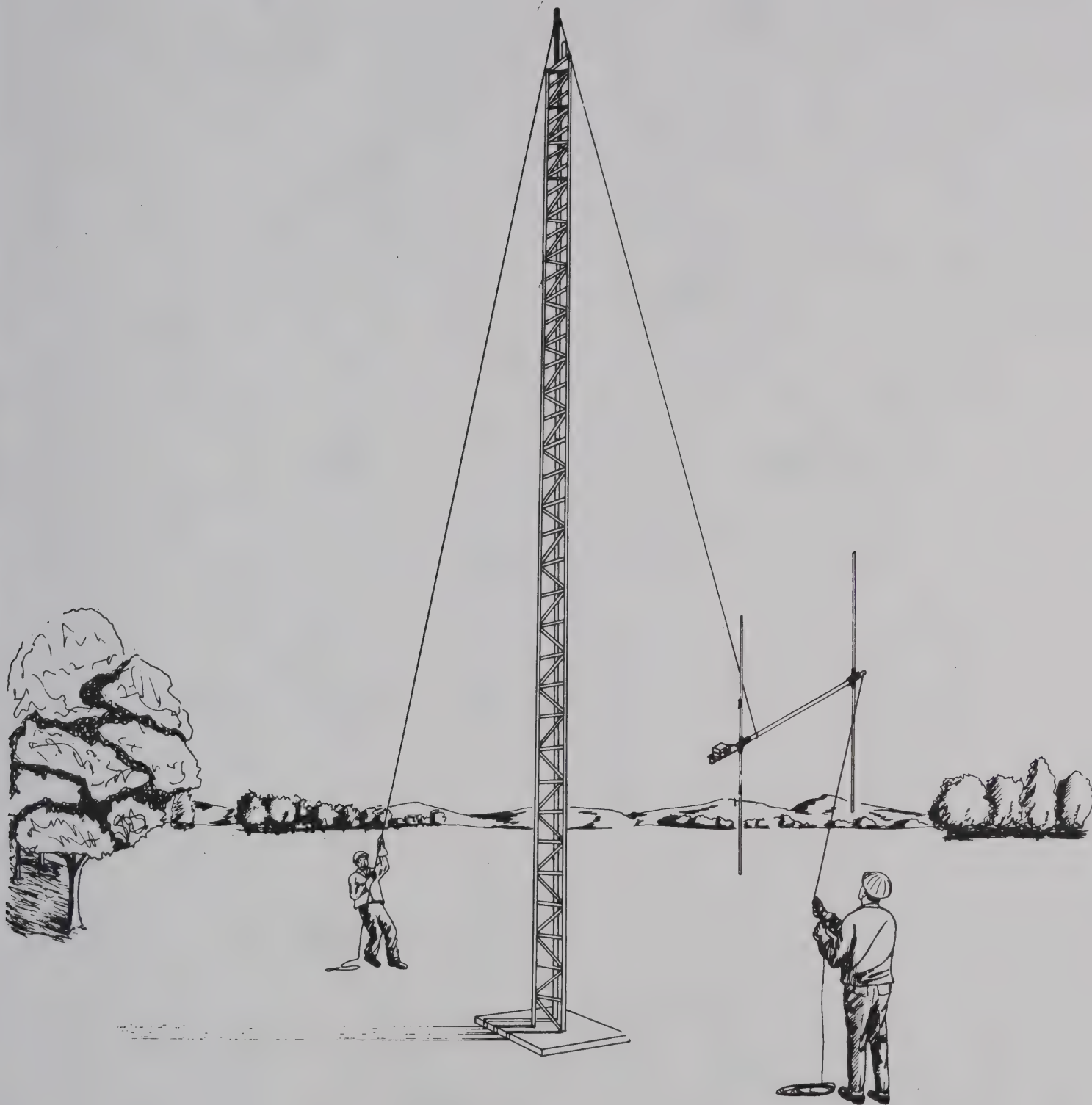


FIGURE 2
ANTENNA SECTION BEING
ERECTED ON TOWER

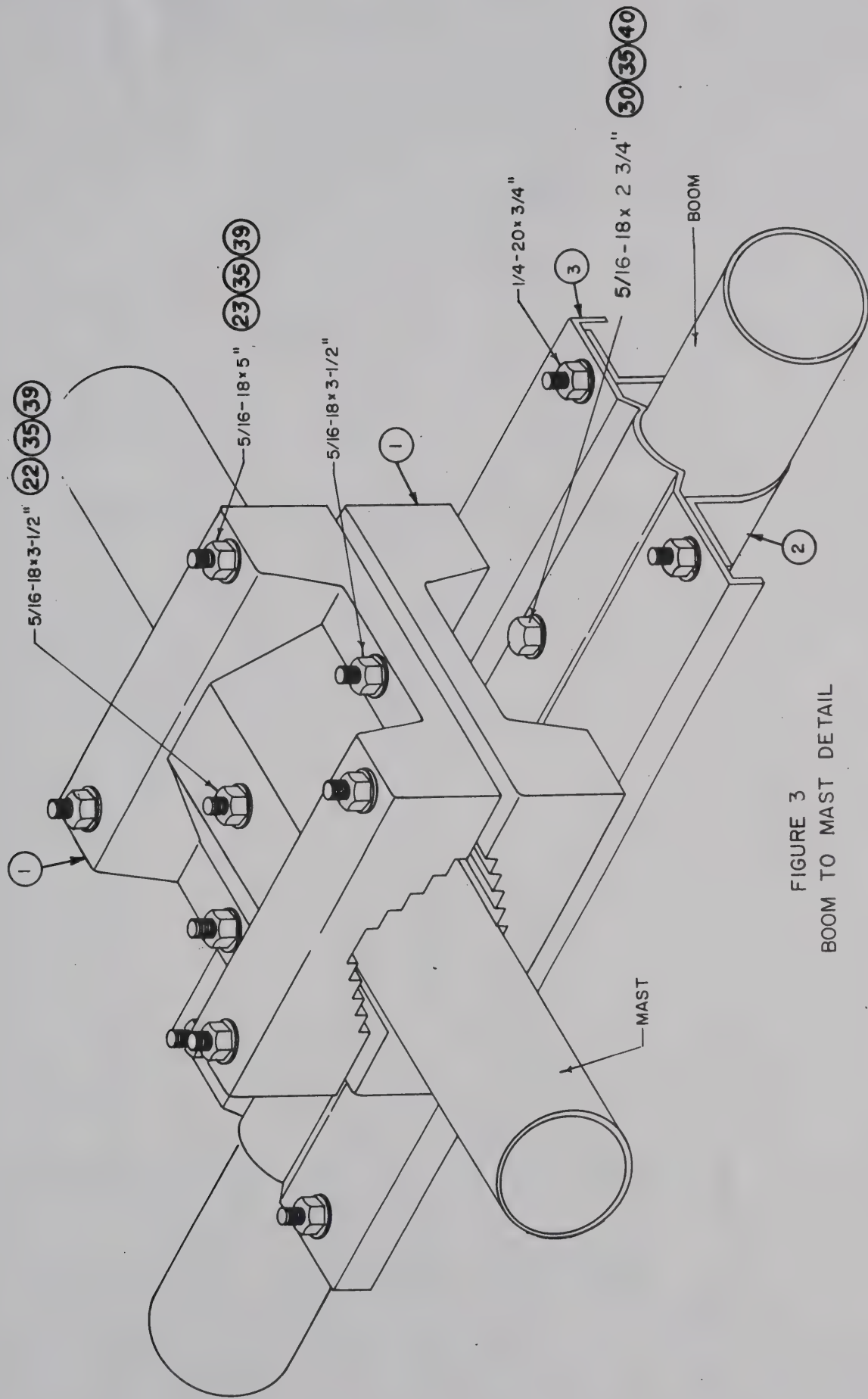
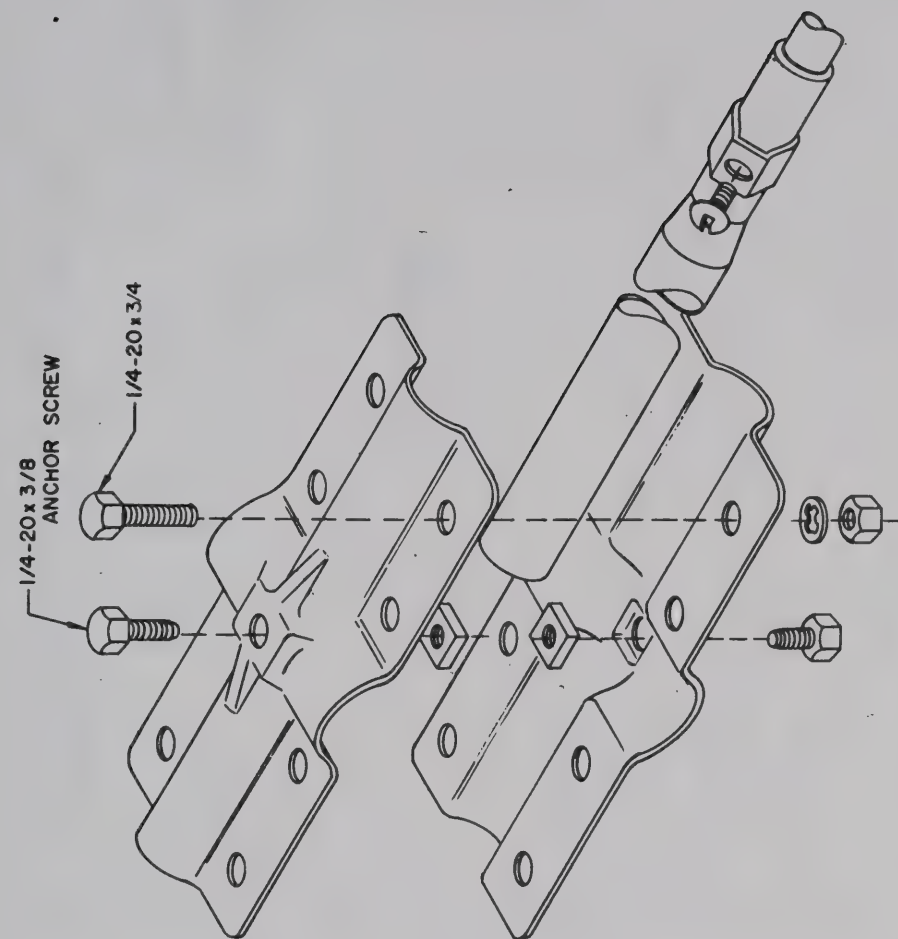
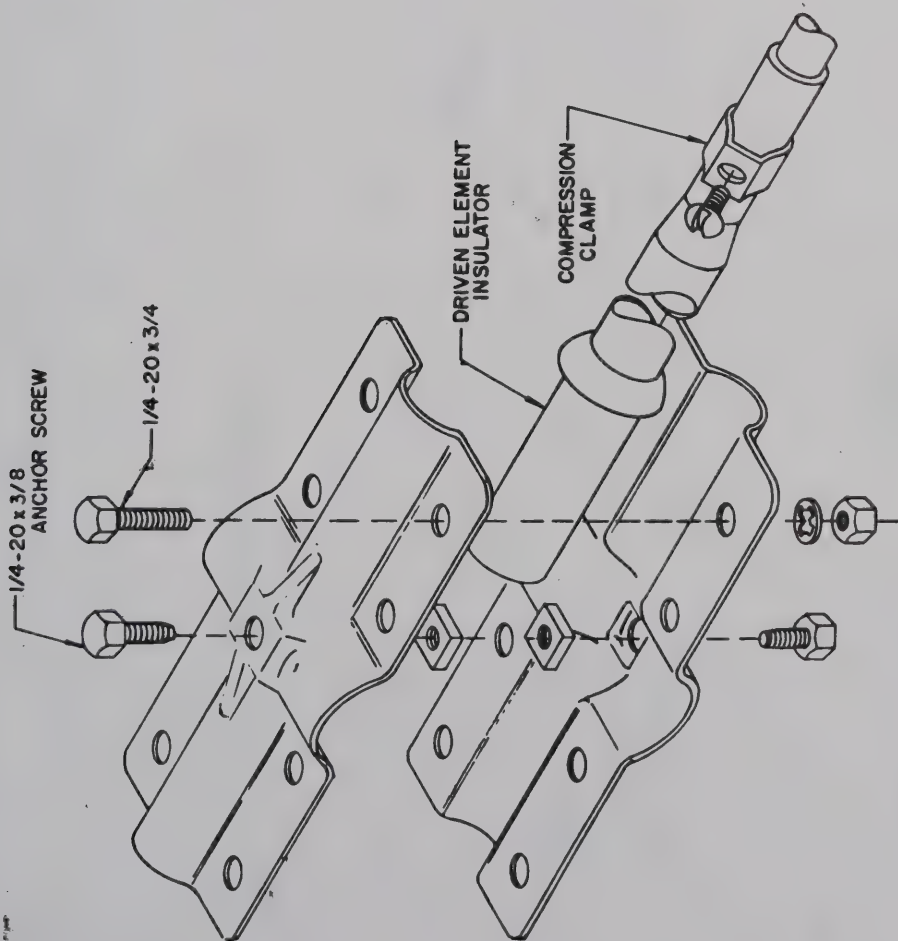


FIGURE 3
 BOOM TO MAST DETAIL

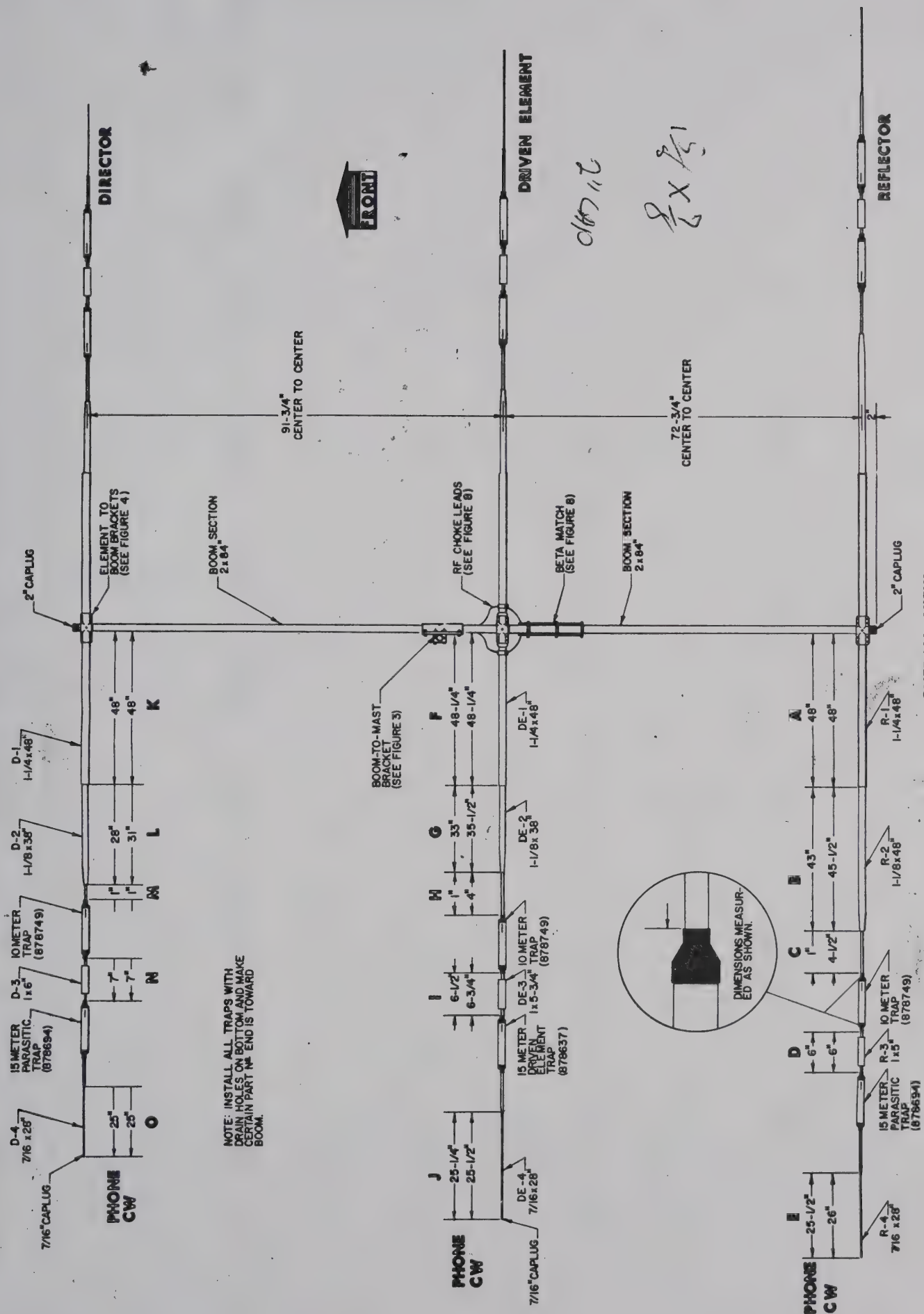


REFLECTOR-DIRECTOR DETAIL

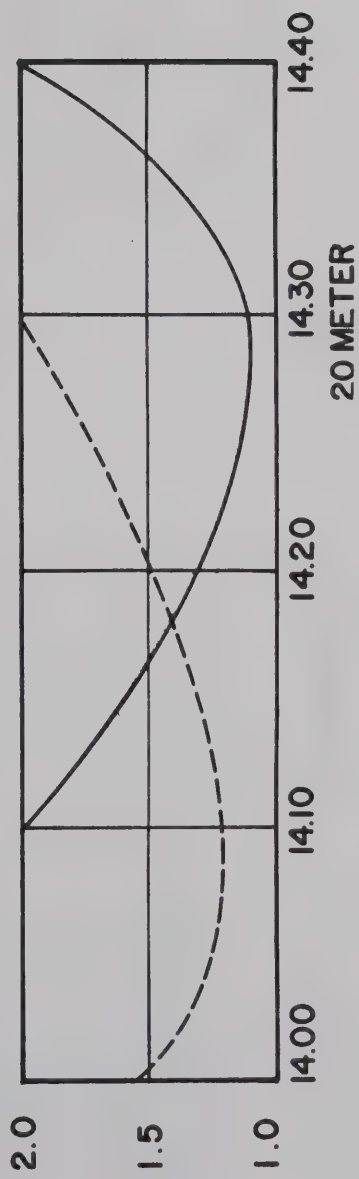
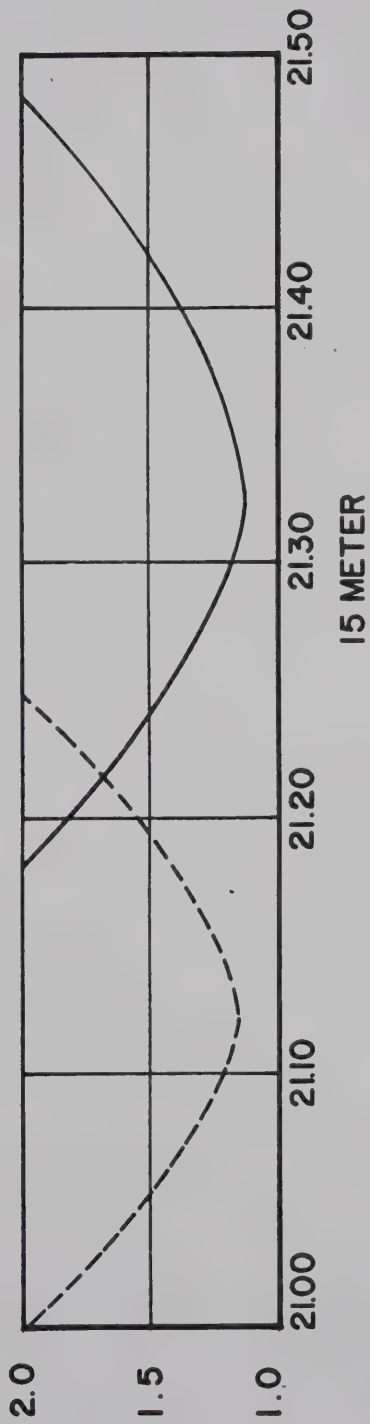
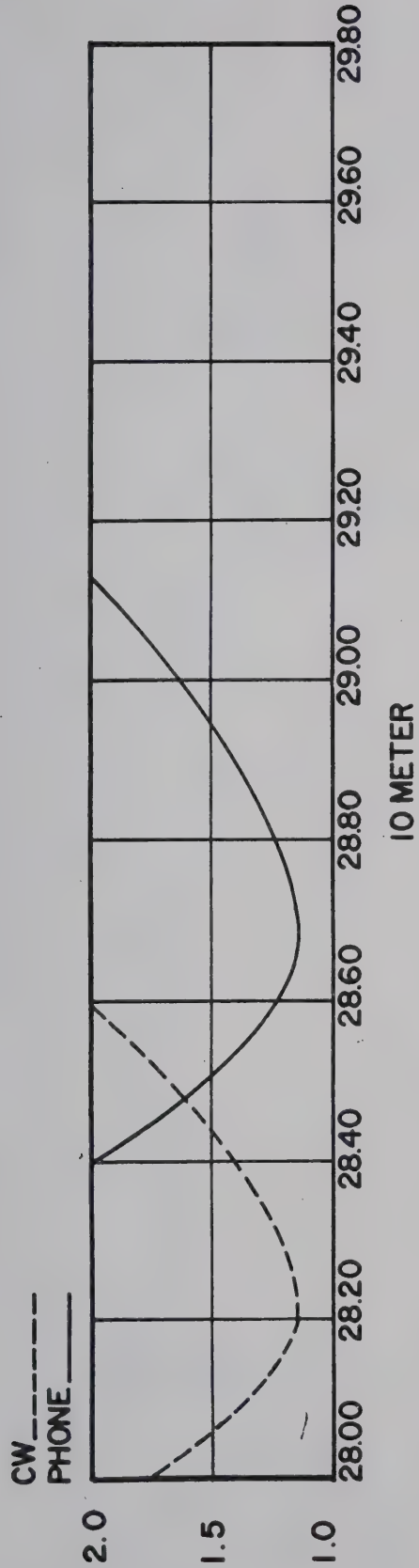


DRIVEN ELEMENT DETAIL

ELEMENT TO BOOM
BRACKET
FIGURE 4



OVERALL VIEW



TH3 Mk3 VSWR CHARTS
FIGURE. 6



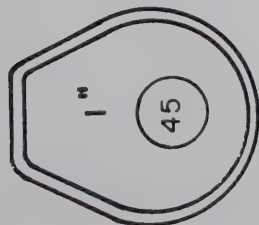
1/4"-20 X 3/8" SCREW

25



1/4-20 SQUARE NUT

38



1"

45



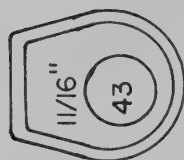
10-24 SQUARE NUT

34



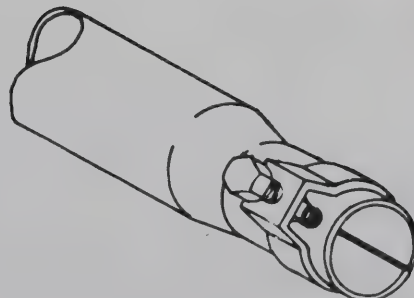
" 10 LOCK WASHER

42

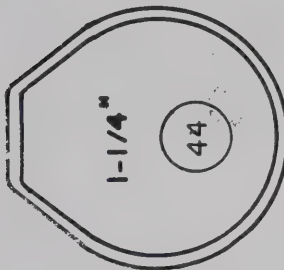


1 1/16"

43



PLACE COMPRESSION CLAMP ON THE END OF THE TUBING WITH THE SCREW HEAD 180° FROM THE SLOT IN THE TUBING.



1-1/4"

44



1/4-20 X 3/8" SCREW

25



1/4-20 SQUARE NUT

38

COMPRESSION CLAMPS

FIGURE 7

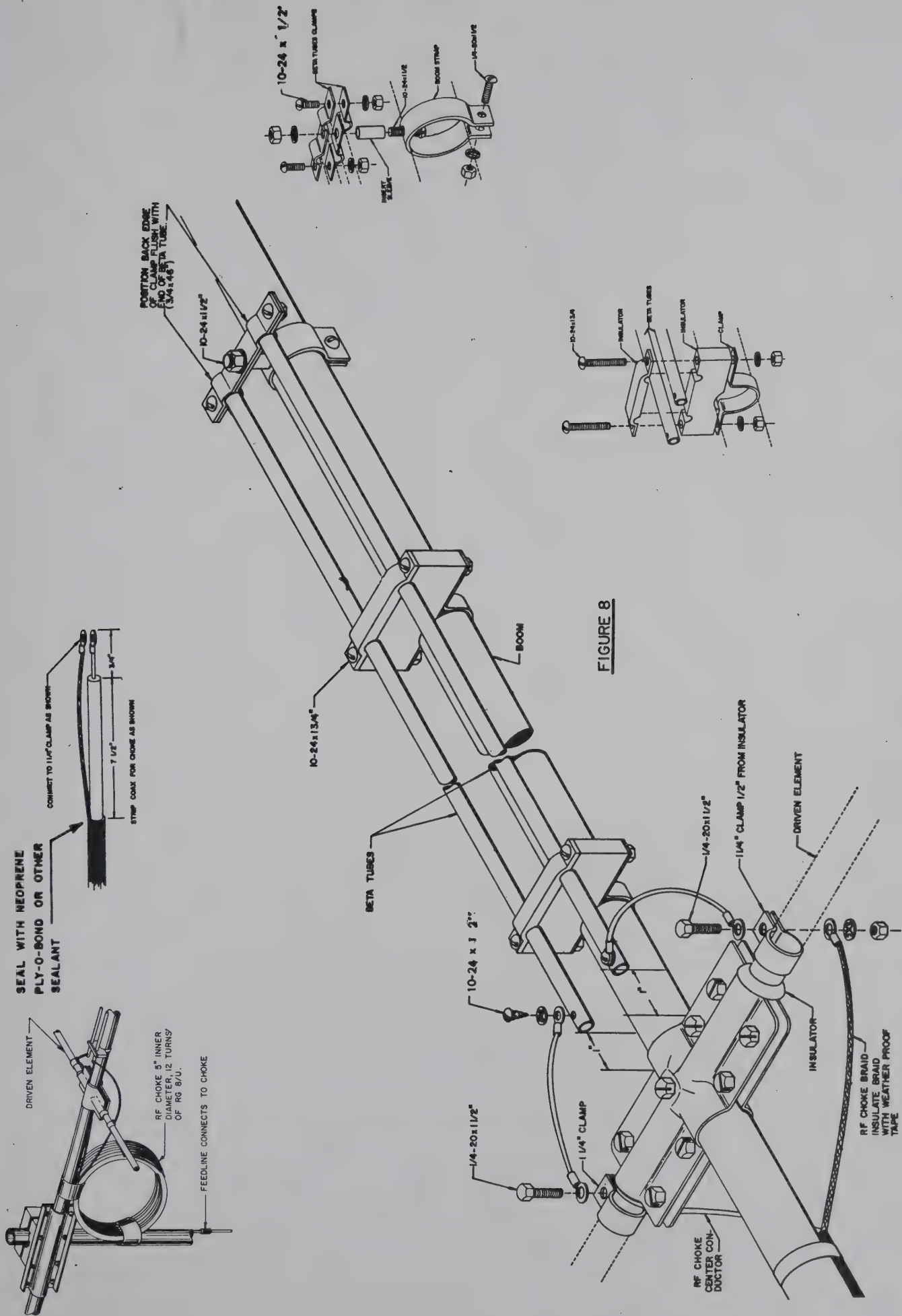


FIGURE 8

INSTRUCTION MANUAL

ORDER NO. 242

Model BN-86 Balun

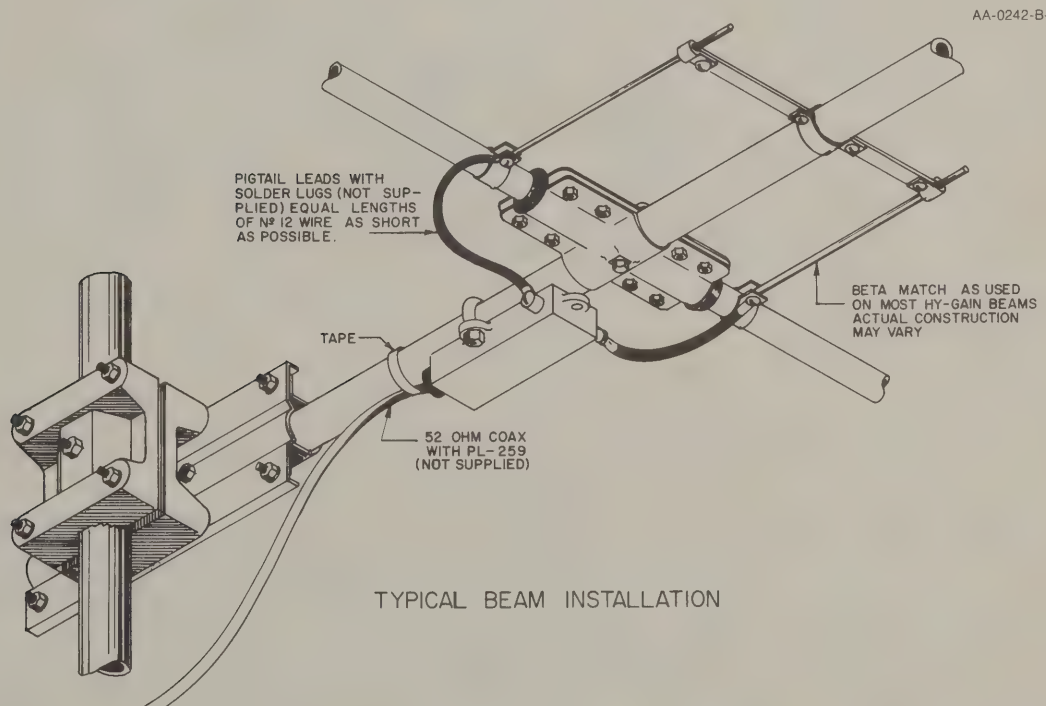
PN 804217

Description

This balun is a ferrite, balanced to unbalanced, antenna matching device. With a transformation ratio of 1:1, the balun will couple into any 52-ohm balanced system such as dipoles, multiband doublets and beam antennas.

CAUTION

Do not use this balun with any matchboxes, antenna tuners, trans-matches or other such device. When the balun is used with such a device, out of resonance operation causes the break-down voltage of the balun to be exceeded. This is due to the extremely high standing wave voltage present on the feedline.



Mounting on Boom or Mast

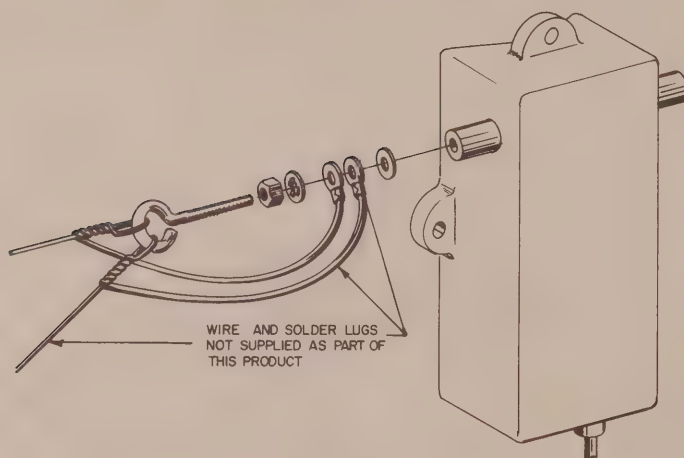
- () Place U-bolt around mast or boom — diameter 1 1/8" to 2 3/8"
- () Place balun against mast or boom and insert the U-bolt through holes on sides of balun.
- () Tighten nuts securely.
- () Connect leads to driven element.
- () Connect coax to receptacle on balun.

NOTE: Fasten the balun as close as possible to the driven element. Leads from the two terminal outputs to the driven element should not exceed either 7" or existing lengths of the coax leads. Longer lengths will lower the resonant frequency of the antenna system.

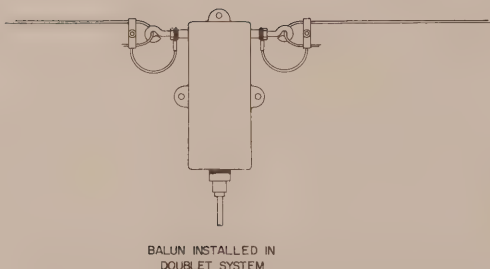
Mounting in a Doublet System

- () Insert two eyebolts in brass fittings at top of balun.
- () Hook doublet wires to eyebolts (the balun replaces the insulator completely).
- () Connect coax to receptacle on balun.

AA-0242-A-002



AA-0242-A-003



NOTE: An ohmmeter check of the balun at all points will show a DC short. *This is normal!* This is not a short with respect to RF energy at the balun's design frequency.

Weatherproofing

The coaxial connection should be weatherproofed with some material such as neoprene.

Specifications

Mechanical —

Weight 1 lb.
Dimensions 3¼" x 6¼"
Input receptacle SO-239
Output receptacle standard terminal lugs
Weather protection weatherproof housing with condensing
drain opening
Housing material ... high impact injection molded, Cycolac plastic

Electrical —

Impedance 52 ohms
Frequency range 3 to 30 MHz
Insertion loss negligible
Power handling capabilities 2 kW PEP

Parts List

Part No.	Description	Qty
873424	balun assembly	1
873466	Parts Pack	1
541363	U-bolt, 10-24 x 2½" x 2¾"	1
547260	eyebolt, ¼"-20	2
556960	nut, ¼"-20 hex	4
556970	nut, 10-24 hex	2
567110	lockwasher, ¼"	4
505540	screw, ¼"-20 x ¾" hex	2

90-DAY LIMITED WARRANTY

Hy-Gain Electronics Corporation warrants each new product manufactured to be free from defects in material and workmanship and agrees to remedy any such defect or to furnish a new part in exchange for any part of any unit which under normal installation, use, and service, discloses such defect within the ninety-day term of this warranty, dated from the date of purchase by the original owner. This warranty applies only to the original purchaser.

This warranty does not extend to any of our products which have been subjected to misuse, neglect, accident, incorrect wiring not our own, improper installation, or to use in violation of instructions furnished by us. Nor does it extend to units which have been repaired or altered outside of our factory, nor to accessories used therewith not of our own manufacture.

Upon receipt of equipment, the purchaser is responsible for checking the contents for damage. Any shipping damage should be referred to the carrier.

Hy-Gain Electronics Corporation reserves the right to make any changes deemed necessary or desirable without advance notice or incurring any obligation to make like changes in units previously manufactured or sold.

This warranty does not cover transportation costs that may be incurred. Hy-Gain Electronics Corporation's sole liability is the remedy of any defect for the ninety-day period of this warranty. Hy-Gain Electronics Corporation is not responsible for

personal injury or property damage resulting from improper or careless installation, or usage not intended by the manufacturer.

No person is authorized to assume for us any other liability in connection with the sale of our products.

All warranties are void and terminated one year after the last unit of its type and design has been manufactured by us.

All claims of defect or shortage should be addressed to:

Hy Gain Warranty Service
Hy-Gain Electronics Corporation
4900 Superior Ave.
Lincoln, Nebraska 68504

You must furnish model number, date, place, and proof of purchase, such as a copy of the sales receipt to establish warranty. Your letter should include all pertinent details along with part or item numbers involved. Do not return anything until requested to do so.

Any returned items must have prior authorization. Unexpected returns are greatly delayed in handling. These delays can be avoided by writing in advance and furnishing the necessary information.

Hy-gain MODEL 238

18 AVQ, 10-thru-80 meter vertical trapped antenna

INSTALLATION & OPERATION INSTRUCTIONS

Vertical Antenna
Model 238

HY-GAIN ELECTRONICS CORPORATION
N.E. Highway 6 at Stevens Creek • Lincoln, Nebraska 68501

GENERAL DESCRIPTION:

The Hy-Gain Model 18 AVQ is an omni-directional, trapped vertical radiator designed to operate on 10 through 80 meters. The antenna comes complete with three sets of guy ropes and is designed for ground mounting. The base assembly is designed to accept a 1 5/8" OD mast (not supplied). The antenna will handle 1 KW AM or 2 KW PEP. The input connector is at DC ground for lightning protection and to insure noise-free operation.

NOTE

If the terminals of the SO-239 input connector are checked with an ohmmeter they will show a direct short. THIS IS NORMAL! The coil in the antenna base assembly puts the entire antenna at DC ground but presents 52 ohms impedance to RF energy.

THEORY OF OPERATION:

Automatic band selection of the 18 AVQ is accomplished through the use of Hy-Q traps. The Hy-Q traps are parallel resonant circuits which effectively isolate the various sections of the vertical antenna to provide a perfect electrical 1/4 wave-length on all bands. The top-hat on the 18 AVQ shortens the overall height by top-loading.

VSWR AND THE FEEDLINE:

The Model 18 AVQ is designed for use with 50 ohm coaxial cable. RG-58/U or RG-8/U may be used. However, RG-8/U polyfoam type is recommended because of its lower losses and higher power handling capabilities. Due to the sharpness caused by trap loading, the antenna has five settings. These settings include three CW and two Phone positions. Refer to the resonant frequency chart contained on the inside pages of this manual to help you choose which mode of transmission covers that portion of the band you wish to favor. Any length of feedline may be used however, keep in mind that longer lengths of feedline will cause corresponding losses in amount of power to the antenna.

CAUTION

Once you have chosen your mode of transmission, use the same mode for all measurements. The traps are high Q and extremely selective, therefore, do not attempt to adjust one band for one mode of transmission and another band for a different mode of transmission or the antenna will not resonate at frequency shown on chart.

INSTALLATION:

The Model 18 AVQ is designed for ground mounting on a 1 5/8" OD mast. The antenna must be guyed at the level as shown in the illustrations contained inside this manual. When raising the antenna vertical, extreme care must be exercised to prevent bending or damaging the tubing. Raise the antenna on a calm day when there is no wind blowing. Once the antenna is installed and securely guyed it will easily withstand winds up to 80 miles per hour.

The antenna should be mounted in the clear away from all surrounding objects. Detrimental effects of surrounding objects is often underestimated in the average antenna installation. It should be pointed out in particular that power lines, downspouts and any other objects of considerable mass or length will deteriorate the performance of any antenna.

CAUTION

When unpacking your antenna, check the inside of all tubing for parts (clamps, insulators, smaller tubing, etc). To conserve space, these smaller articles are sometimes put inside larger pieces.

STEP-BY-STEP ASSEMBLY:

- () Select the base assembly with 1 1/4" tube and a 1 1/4" compression clamp. Assemble the compression clamp and slip it over the 1 1/4" tube. Do not tighten at this time.
- () Select the 1 1/8 x 28" piece of tubing and slip it into the 1 1/4" tube. Adjust the tube to dimension A for your mode of transmission then tighten the compression clamp securely.

NOTE

The compression clamps used in this antenna are a universal device and are used in many varied applications. Depending upon the application, the screw head may or may not contact the lockwasher or clamp body. **DO NOT Over Tighten the clamps in an attempt to contact the clamp body with the screw head. To do so may result in clamp failure or tube failure caused by puncture.**

- (✓) Install a 1 1/8" compression clamp onto the 1 1/8" tubing.
- (✓) Select the 1 x 10" section of tubing and slip it onto the 1 1/8" tubing. Adjust the tubing to dimension B for your mode of transmission then tighten the compression clamp securely.
- (✓) Install a 1" compression clamp onto the 1" piece of tubing.
- (✓) Select the 10 meter trap (877132) and slip it into the 1" tubing. Adjust dimension C for your mode of transmission and tighten the compression clamp securely.

NOTE

Install all traps as shown with open end facing down.

- (✓) If adjusting for CW select the 1 x 7" piece of tubing; if adjusting for Phone select the 1 x 8" piece of tubing. Place a 1" compression clamp on each end of the tube and slip the tube over the 10 meter trap. Insert the 15 meter trap (873908) into the 1" tubing. Adjust dimension D for your mode of transmission then tighten the compression clamps securely.
- (✓) If adjusting for CW select the 1 x 8" piece of tubing; if adjusting for Phone select the 1 x 7" piece of tubing and place a 1" compression clamp on each end. Slip the 1" tube over the 15 meter trap. Insert the 20 meter trap (873911) into the 1" piece of tubing. Adjust dimension E for your mode of transmission then tighten the compression clamps securely.

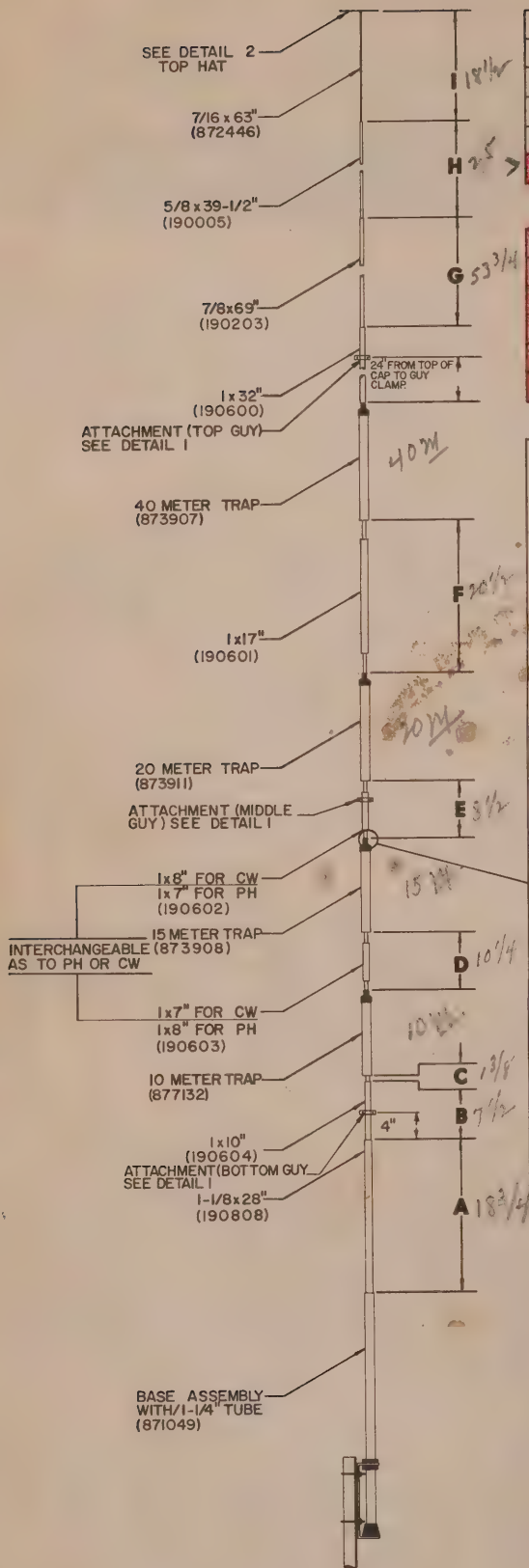


FIGURE 1

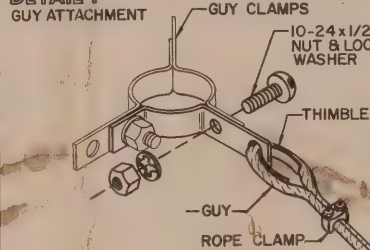
	A	B	C	D	E	F	G	H	I
LOW CW	25-1/2"	7-1/2"	1-3/8"	7-1/2"	8-1/2"	22-3/8"	66-1/2"	37"	60-1/2"
MED CW	25-1/2"	7-1/2"	1-3/8"	7-1/2"	8-1/2"	24"	66-1/2"	37"	42-3/8"
HIGH CW	25-1/2"	7-1/2"	1-3/8"	8-3/4"	8-1/2"	24"	66-1/2"	34"	24-1/2"
LOW PHONE	18-3/4"	7-1/2"	1-3/8"	10-1/4"	8-1/2"	18-1/2"	53-3/4"	35"	24-1/2"
HIGH PHONE	18-3/4"	7-1/2"	1-3/8"	10-1/4"	8-1/2"	20-1/2"	53-3/4"	25"	18-1/2"

CHART FOR 2:1 OR LESS VSWR

BAND	HI PHONE	LOW PHONE	HI CW	MED CW	LOW CW
10M	28.50-29.70	28.50 - 29.70	28.00-28.50	28.00-28.50	28.00-28.50
15M	21.25-21.45	21.25 - 21.45	21.00-21.25	21.00-21.25	21.00-21.25
20M	14.20-14.35	14.20 - 14.35	14.00-14.20	14.00-14.20	14.00-14.20
40M	7.20-7.30	7.20 - 7.30	7.00-7.20	7.00-7.20	7.00-7.175
80M	3.90-4.00	3.80 - 3.90	3.70-3.80	3.60-3.70	3.50-3.60

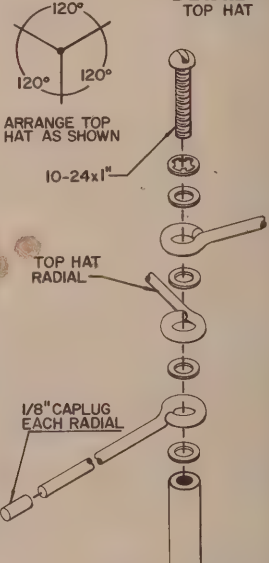
DETAIL 1

GUY ATTACHMENT



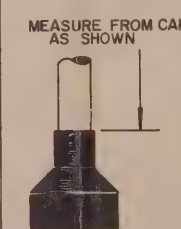
DETAIL 2

TOP HAT



DETAIL 3

TRAP MEASUREMENT



DETAIL 4

COMPRESSION CLAMP

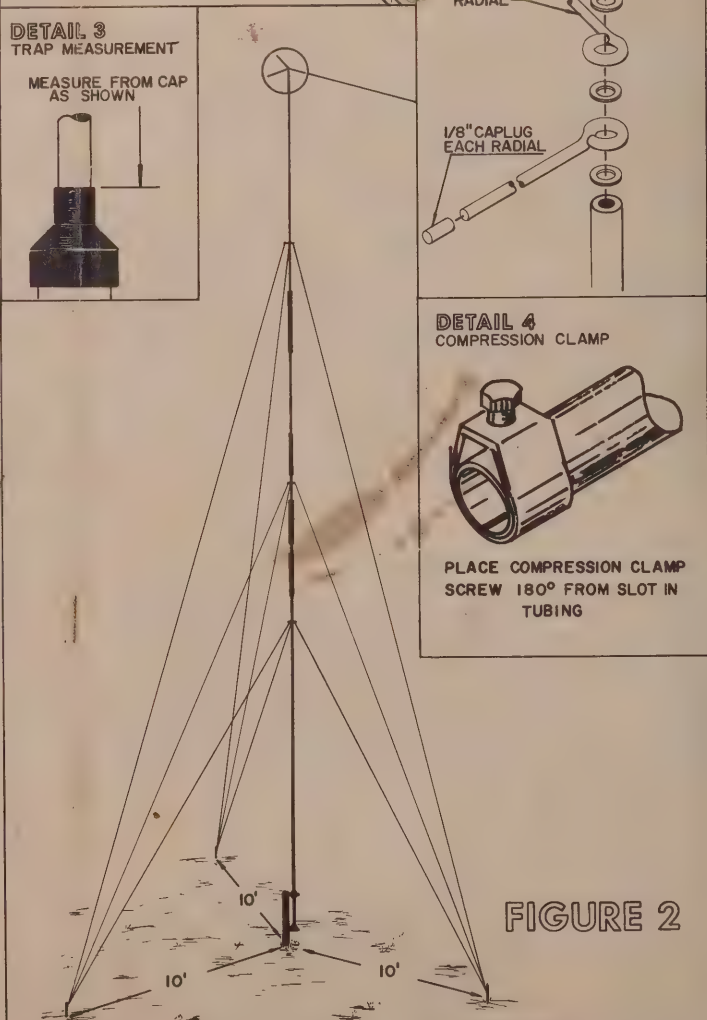
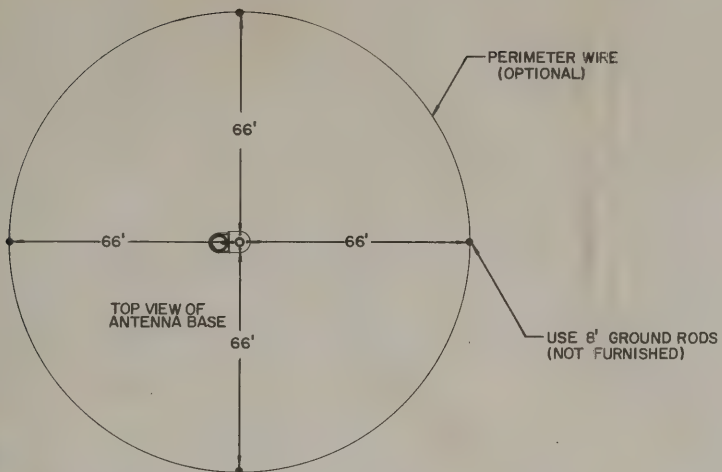
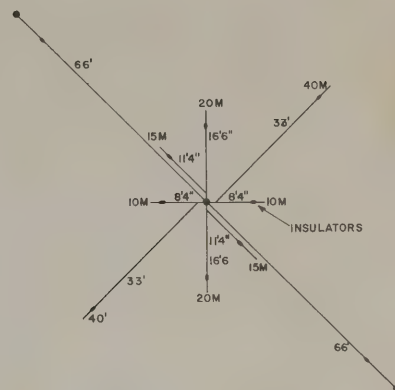


FIGURE 2

FIGURE 3, RADIAL SYSTEMS SEE ATTACHMENT DETAIL BELOW



GROUND MOUNT



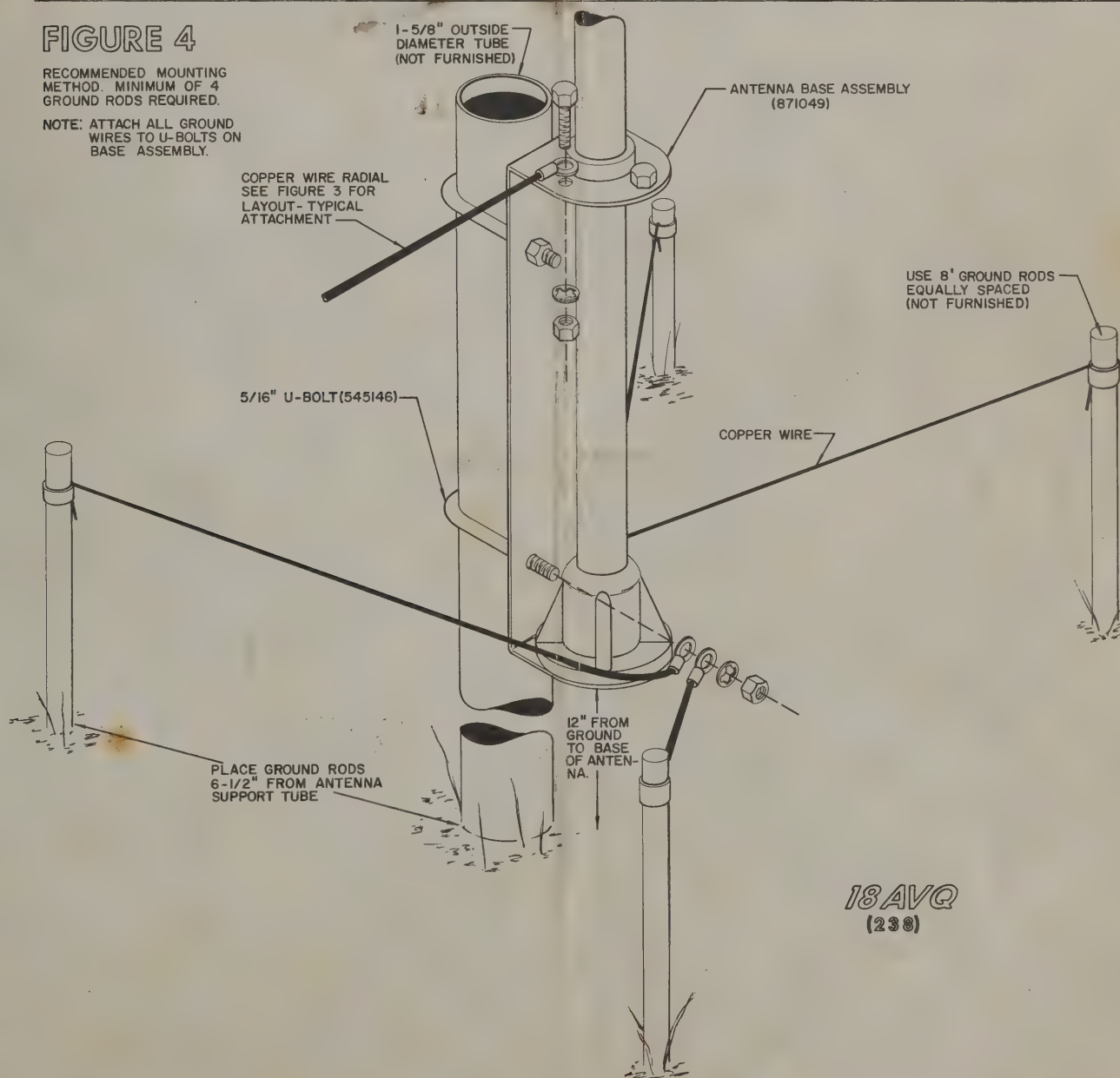
ROOF MOUNT

RADIAL SYSTEM FOR AREAS WITH POOR GROUND CONDUCTIVITY, 4 WIRES MINIMUM REQUIREMENT, 12 WIRES RECOMMENDED THIS SYSTEM CAN BE BURIED BELOW GROUND IF DESIRED

FIGURE 4

RECOMMENDED MOUNTING METHOD. MINIMUM OF 4 GROUND RODS REQUIRED.

NOTE: ATTACH ALL GROUND WIRES TO U-BOLTS ON BASE ASSEMBLY.



18AVQ
(238)

- (✓) Select the 1 x 17" piece of tubing and install a 1" compression clamp on each end. Slip the 1" tubing over the 20 meter trap. Insert the 40 meter trap (873907) into the 1" tubing. Adjust dimension F for your mode of transmission then tighten the compression clamps securely.
- (✓) Select the 1 x 32" piece of tubing and install a 1" compression clamp on each end. Slip the 1 x 32" piece of tubing over the 40 meter trap until the edge of the tubing rests against the plastic trap cap. Tighten the bottom 1" compression clamp securely.
- (✓) Select the 7/8 x 69" piece of tubing and slip the unswaged end into the 1" tube. Adjust dimension G for your mode of transmission then tighten the compression clamp securely.
- (✓) Select the 5/8 x 39 1/2" section of tubing and slip the unswaged end into the 7/8" tube. Adjust dimension H for your mode of transmission and tighten the compression clamp securely.
- (✓) Select the 7/16 x 63" piece of tubing and note that one end has a threaded insert. Slip the other end of the 7/16" tube into the 5/8" tube. Adjust dimension I for your mode of transmission. Then tighten the compression clamp securely.
- (✓) Install the three top-hat radials as shown. Position them so they are approximately 120 degrees apart.
- (✓) Install a set of guy rope clamps approximately 5" below the 10 meter trap. Install the second set of guy rope clamps approximately 24" above the 40 meter trap cap, and the third set approximately 4" above 15 meter trap.
- (✓) Cut the 180' length of rope in three 15' sections, three 20' sections and three 25' sections. Install the 15' sections onto the lower set of guy rope clamps using the rope clamps and thimbles provided. Install the longer lengths of rope onto the upper guy brackets in the same manner.
- () Raise the antenna vertical exercising extreme care to prevent damaging the tubing. Install the antenna on a 15/8" O.D. mast driven into the ground and securely guy the antenna as shown in the illustrations.
- () Ground the antenna base in the manner shown in the illustrations. For optimum results (and low ohmic losses) it is recommended that you use four 5/8" x 8" ground rods installed 6" from the base. However, excellent results will be obtained even with only one ground rod. One ground rod is the absolute minimum required for proper operation of the antenna.
- () Attach the ground rods to the antenna base using #8 or larger copper or aluminum wire. Attach the wire to the U-bolt on the antenna base assembly.

NOTE

Add radial system for areas with poor ground conductivity. Radials should consist of 66" lengths of aluminum wire grounded at perimeter with ground rods. A perimeter wire may be added for even greater effect. Attach the radials to antenna base assembly using the 1/4" screws installed in upper insulator.

If the 18 AVQ is not ground mounted, a ground radial system MUST be installed if the antenna is to operate properly. It is recommended that you obtain a Hy-Gain Model 14 RMQ roof mounting kit and add three 66 foot radials for 80 meter operation. The three 66 foot radials should be spaced equally about the antenna base in a manner similar to the radials supplied with the roof mounting kit. Aluminum wire is recommended to prevent harmful chemical action caused by dissimilar metals.

CAUTION

A radial system MUST be added for proper operation when this antenna is mounted more than 24" above ground level.

The radials do NOT have to run in a straight line. They can be bent over the roof edge or zig-zagged in any manner, however, they MUST be insulated from the roof and they must not cross each other or be folded back upon themselves. If a high VSWR is indicated it may be necessary to alter the radial placement to bring the VSWR down. This can be done only by the "trial and error" method.

Remember, if a ground radial system is to operate properly it MUST be grounded. To do this, attach a ground wire to a U-bolt on the antenna base. Run this ground wire by the most direct path to an 8 foot ground rod driven into the ground.

An alternate radial system, without the 14 RMQ, can be constructed using fifteen 66 foot radials. Once again aluminum wire is recommended.

NOTE

To prolong the life of this product in or around coastal areas, it is recommended that all hardware be encapsulated with a silicone rubber compound such as DOW-CORNING silastic rubber or G. E. silicone seal to prevent atmospheric deterioration.

PARTS LIST

Part No.	Description	Qty
872446	Top Element, 7/16 x 63" w/insert	1
190005	Tube, 5/8 x 39 1/2"	1
190203	Tube, 7/8 x 69"	1
190600	Tube, 1 x 32"	1
190601	Tube, 1 x 17"	1
190603	Tube, 1 x 8"	1
190602	Tube, 1 x 7"	1
190604	Tube, 1 x 10"	1
190808	Tube, 1 1/8 x 28"	1
873907	40 Meter Trap	1
873911	20 Meter Trap	1
873908	15 Meter Trap	1
877132	10 Meter Trap	1
871049	Base Assembly w/1 1/4" Tube	1
691135	Guy Rope, 180 Ft.	1
173499	Top Hat Radials, 1/8" Wire	3
873906	Parts Package	1
165123	Compression Clamp, 1/2"	1
165361	Compression Clamp, 3/4"	1
168682	Compression Clamp, 1"	9
168681	Compression Clamp, 1 1/8"	1
168680	Compression Clamp, 1 1/4"	1
505671	Screw, 10-24 x 5/16" RH	1
506520	Screw, 10-24 x 3/8" RH	1
555362	Nut, 10-24 Square	2
567125	Lockwasher, #10	11
541441	Screw, 1/4-20 x 3/8" HH	11
171507	Guy Bracket	9
506485	Screw, 10-24 x 1/2" RH	9
351700	Rope Thimble	9
359769	Rope Clamp	9
545146	U-Bolts, 5/16-18	2
556970	Nut, 10-24 Hex	9
506455	Screw, 10-24 x 1" RH	1
567130	Washer, #10 Flat	4
455624	Caplug, 1/8"	3
556945	Nut, 5/16-18 Hex	4
558685	Nut, 1/4-20 Square	11
567075	Lockwasher, 5/16"	4
506325	Screw, 1/4-20 x 3/4" HH	3
556960	Nut, 1/4-20	3
567110	Lockwasher, 1/4	3

Printed in USA

Series Date 3/20/68
PN 805655

INSTRUCTION MANUAL

ORDER NO. 155

Center Insulator "CI"

PN 800171

Description

The "CI" is a weatherproof, lightweight, high strength center insulator. It is used for connecting coaxial feedline to a doublet-type antenna. The "CI" will accept RG-8/U, RG-11/U, RG-58/U, and RG-59/U. The insulator can be hung from a supporting mast.

Coax Assembly Instructions

If you are using RG-8/U or RG-11/U, strip the end of the coax as shown in Figure 1B. If you are using a smaller coax (RG-58/U, RG-59/U), insert the reducing bushing over the coax before stripping back as shown in Figure 1A.

Solder a 1/4" solder lug on the coax as shown in the Figures 1A and 1B.

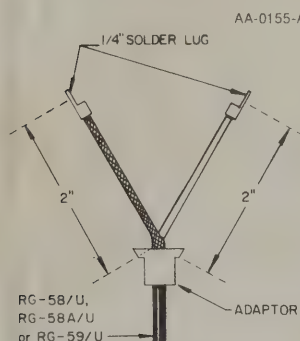


Figure 1A

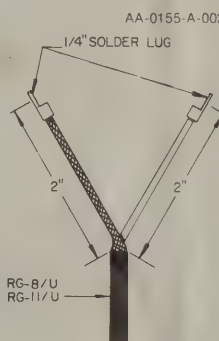


Figure 1B

Attach the coax and dipole wires to the eyebolts exactly as shown in Figure 2. The dipole is put through the eyebolt twice and wrapped around itself at least five times. The free end is soldered to the solder lug for electrical connection.

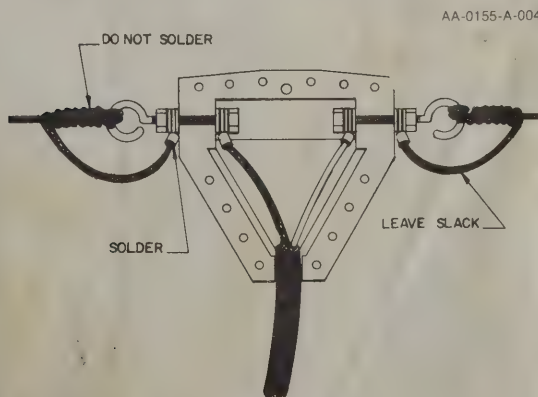


Figure 2

NOTE

IN FIGURE 2 ALL HARDWARE
USED TO ASSEMBLE CENTER
CONDUCTOR HAS BEEN OMITTED
FOR CLARITY

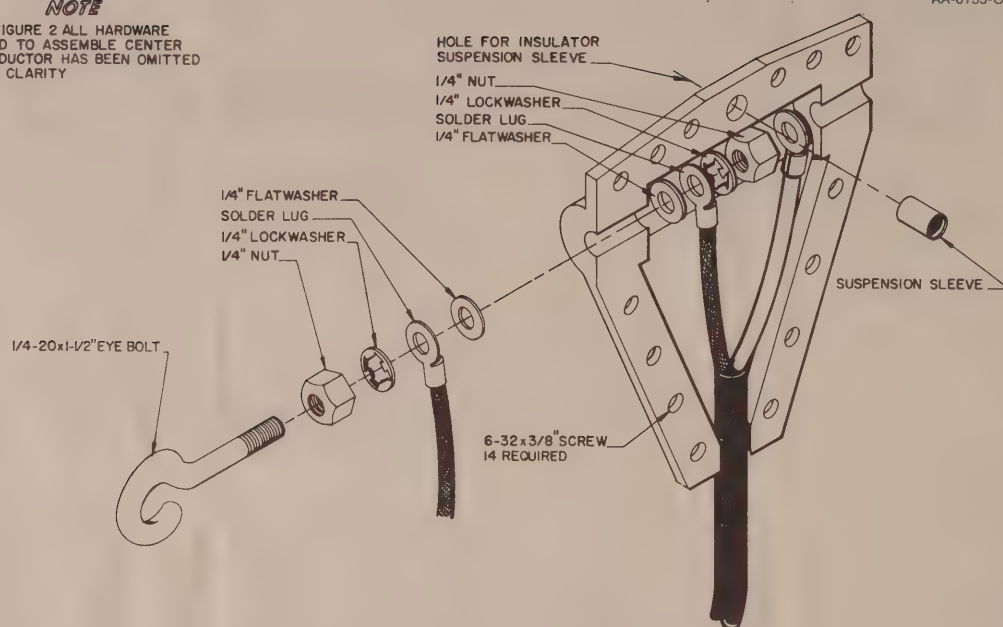


Figure 3

Attach the pigtails of the coax to each eyebolt as shown in the exploded view Figure 3.

Lay the coax connectors, eyebolts, and the dipole wires in one half of the insulator exactly as shown in Figure 2.

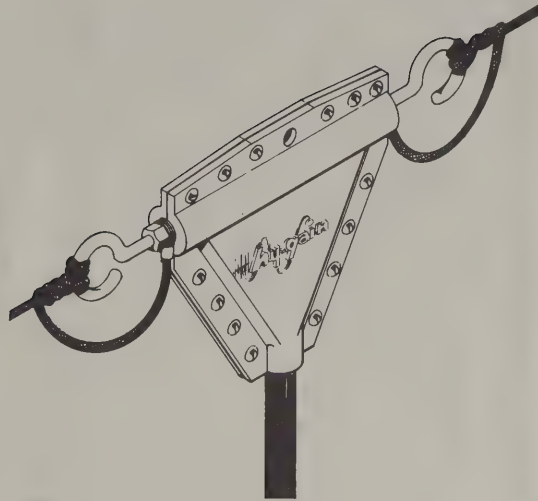
Apply silicone grease, Vaseline, or some similar substance to seal the coax and edges against weather.

Assemble the upper half of the insulator to the lower half and secure using fourteen #6-32 machine screws and nuts. The outer 1/4"-20 nut on each eye bolt is then tightened to insure a good connection. *Do not twist the eye bolt!* This will disturb the internal connections and damage the antenna.

Mounting Instructions

As with any dipole, it is important that this antenna be mounted in the clear. The higher the better, as a general rule. In this respect, a little additional transmission line, with accompanying transmission losses is preferred over the close proximity of surrounding objects.

The light weight of the Model "CI" center insulator allows it to be supported either by the antenna itself, or suspended from a support. A hole is provided in the top of the insulator for suspension from the center. When supporting the antenna by the center insulator, do not let the insulator contact any of the support structure.



CAUTION

When supporting the antenna by the ends only, do not try to take all sag out of the antenna. This will cause tremendous stress to be built up and cause failure of the antenna. Several feet of sag in the center will do no harm, either electrically or mechanically.

Parts List

Part No.	Description	Qty
878970	Parts Pack	1
171586	sleeve, 5/16" x 5/8"	1
465460	insulator, 1/8" x 4" triangle	2
465570	insulator, adaptor plug	1
506680	screw, #6-32 x 3/8"	14
556960	nut, 1/4"-20	4
557000	nut, #6-32	14
567110	lockwasher, 1/4"	4
561334	1/4" flat washer	4
547260	eye bolt, 1/4" x 1 1/2" x 1/2"	2
677555	solder lug, 1/4"	4

90-DAY LIMITED WARRANTY

Hy-Gain Electronics Corporation warrants each new product manufactured to be free from defects in material and workmanship and agrees to remedy any such defect or to furnish a new part in exchange for any part of any unit which under normal installation, use, and service, discloses such defect within the ninety-day term of this warranty, dated from the date of purchase by the original owner. This warranty applies only to the original purchaser.

This warranty does not extend to any of our products which have been subjected to misuse, neglect, accident, incorrect wiring not our own, improper installation, or to use in violation of instructions furnished by us. Nor does it extend to units which have been repaired or altered outside of our factory, nor to accessories used therewith not of our own manufacture.

Upon receipt of equipment, the purchaser is responsible for checking the contents for damage. Any shipping damage should be referred to the carrier.

Hy-Gain Electronics Corporation reserves the right to make any changes deemed necessary or desirable without advance notice or incurring any obligation to make like changes in units previously manufactured or sold.

This warranty does not cover transportation costs that may be incurred. Hy-Gain Electronics Corporation's sole liability is the remedy of any defect for the ninety-day period of this warranty. Hy-Gain Electronics Corporation is not responsible for

personal injury or property damage resulting from improper or careless installation, or usage not intended by the manufacturer.

No person is authorized to assume for us any other liability in connection with the sale of our products.

All warranties are void and terminated one year after the last unit of its type and design has been manufactured by us.

All claims of defect or shortage should be addressed to:

Hy Gain Warranty Service
Hy-Gain Electronics Corporation
4900 Superior Ave.
Lincoln, Nebraska 68504

You must furnish model number, date, place, and proof of purchase, such as a copy of the sales receipt to establish warranty. Your letter should include all pertinent details along with part or item numbers involved. Do not return anything until requested to do so. No warranty card is furnished; you must supply the above information.

Any returned items must have prior authorization. Unexpected returns are greatly delayed in handling. These delays can be avoided by writing in advance and furnishing the necessary information.

MODEL LC80 LOADING COIL

LC-80 INSTRUCTIONS

The LC-80, 80 Meter loading coil electrically lengthens the Model 14AVS vertical to 80 meter resonance. Below are the approximate tap points, in turns of wire counted down from the top of the coil. These tap positions may vary somewhat due to surrounding objects and (in the case of roof mounting) height above ground. Best adjustment method is through the use of the SWR bridge. Adjust tap for minimum SWR.

ROOF TOP MOUNTING

This type of mounting may be accomplished without adding additional ground radials for 80 meters. Use the standard 8 radials system as recommended in the 14AVS Manual. The approximate tap points are:

- 24 2/3 Turns from the Top on CW
- 12 2/3 Turns from the Top on Phone

GROUND MOUNTING

Follow the directions included with the Model 14AVS for ground mounting the vertical.

- 19 Turns from the Top on CW
- 12 1/3 Turns from the Top on Phone

LC-80 PARTS LIST

1 5/8" Tube Clamp Assembly	1
1 1/4" Tube Clamp Assembly	1
1" Tube Clamp Assembly	2
Tube Clamp Spacer	2
1/4 - 20 Hex Nuts	4
1/4 - 20 Lock Washers	4
Solder Lug	1
#8 Self Tapping Screw	1

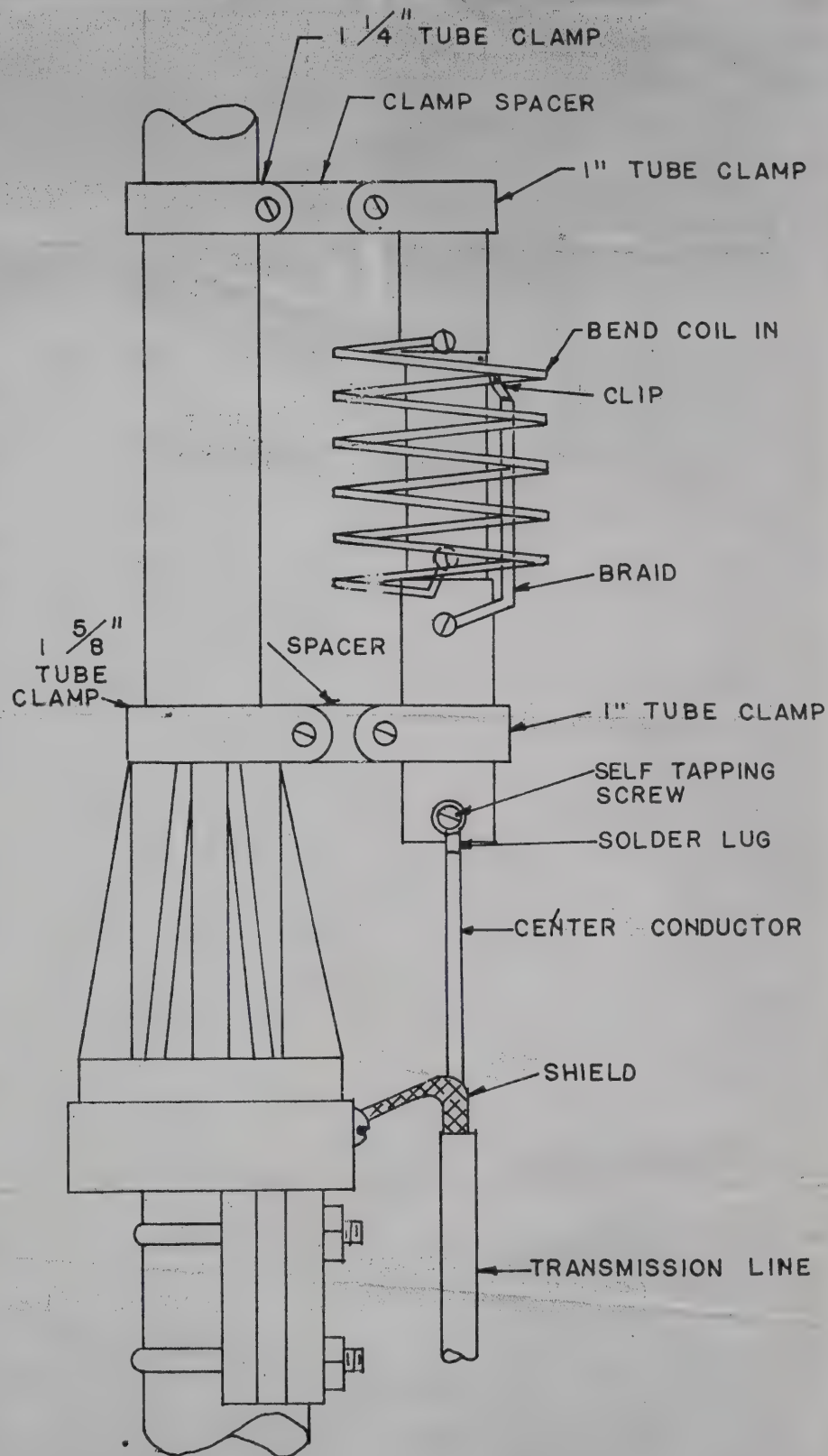


FIGURE 1

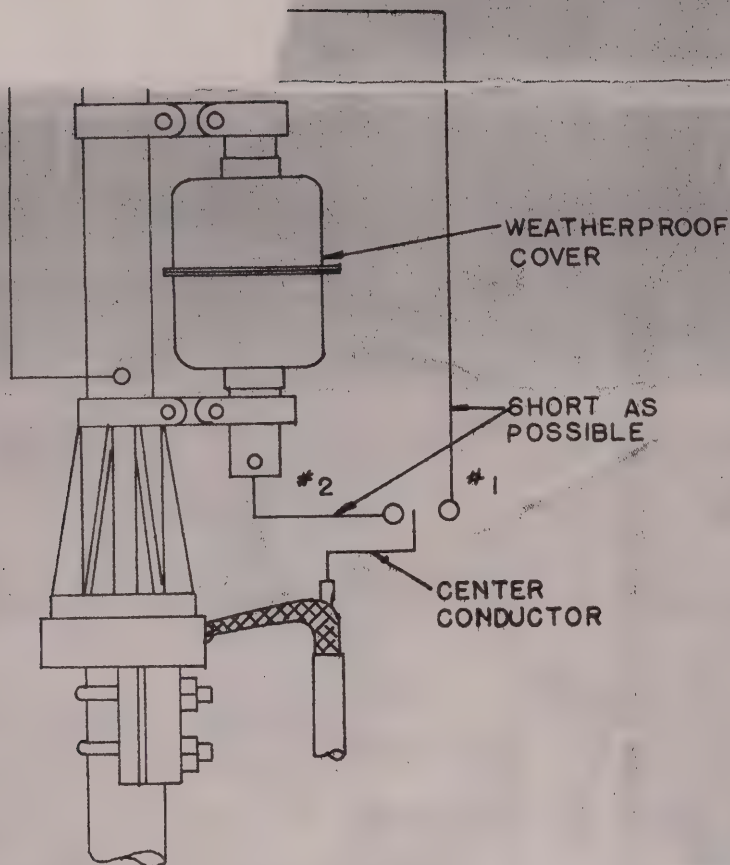
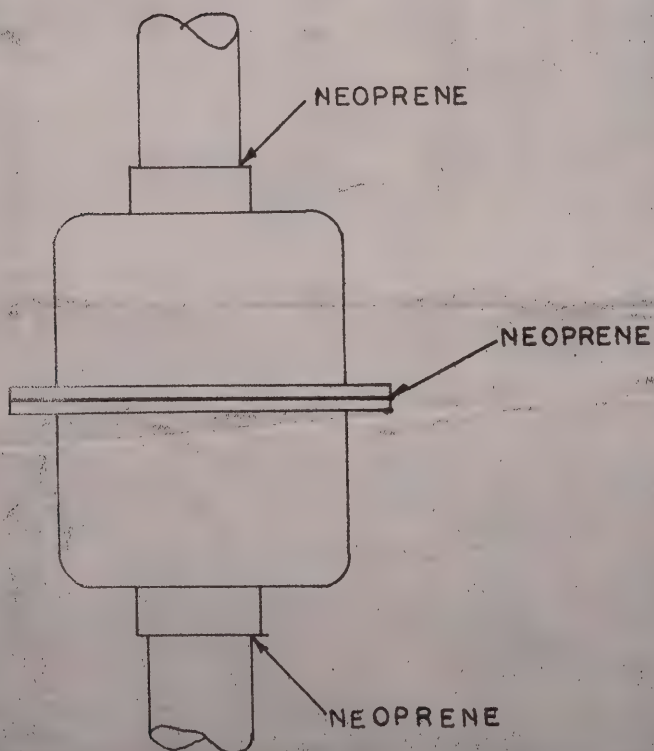


FIGURE 2



INSTRUCTIONS:

Mount the LC-80 on to the 14AVS as shown in Figure #1. Make sure the bottom clamp is attached to the Nylon base insulator and is not shorted to the vertical proper.

Slide the two halves of the cover as far apart as possible and tap up and down on the coil until the proper tap point is found. It is suggested that you find this point by tapping on the outside of the coil. The wire at the point of the attachment may then be bent in toward the center of the coil and the braid and clip moved to that point, tapping the wire on the inside.

Slide the lower cover up to its proper position and apply neoprene on the flat mating surfaces. Press both covers together. Apply Neoprene around the two seal points above and below the cover where the tubing is extending out of the cover.

A method for making the LC-80 automatic is shown in Figure 2, using a relay to switch the center conductor from #1 to #2. Other methods may suggest themselves to the users who wish the added convenience.

Coaxial or weather protected relays are suggested.

IMPORTANT:

Only one feed line is used, as shown in Figure 2. Be sure to remove the transmission line from the SO239 (Base Insulator) and attach as shown in Figure 2. Position #1 selects 10 thru 40 meter operation. Position #2 offers only 80-75M resonance.

MODEL LC80 LOADING COIL

LC-80 INSTRUCTIONS

The LC-80, 80 Meter loading coil electrically lengthens the Model 14AVS vertical to 80 meter resonance. Below are the approximate tap points, in turns of wire counted down from the top of the coil. These tap positions may vary somewhat due to surrounding objects and (in the case of roof mounting) height above ground. Best adjustment method is through the use of the SWR bridge. Adjust tap for minimum SWR.

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19 Turns from the Top on CW
17 1/3 Turns from the Top on Phone

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1 1/4" Tube Clamp Assembly	1
1" Tube Clamp Assembly	2
Tube Clamp Spacer	2
1/4 - 20 Hex Nuts	4
1/4 - 20 Lock Washers	4
Solder Lug	1
#8 Self Tapping Screw	1

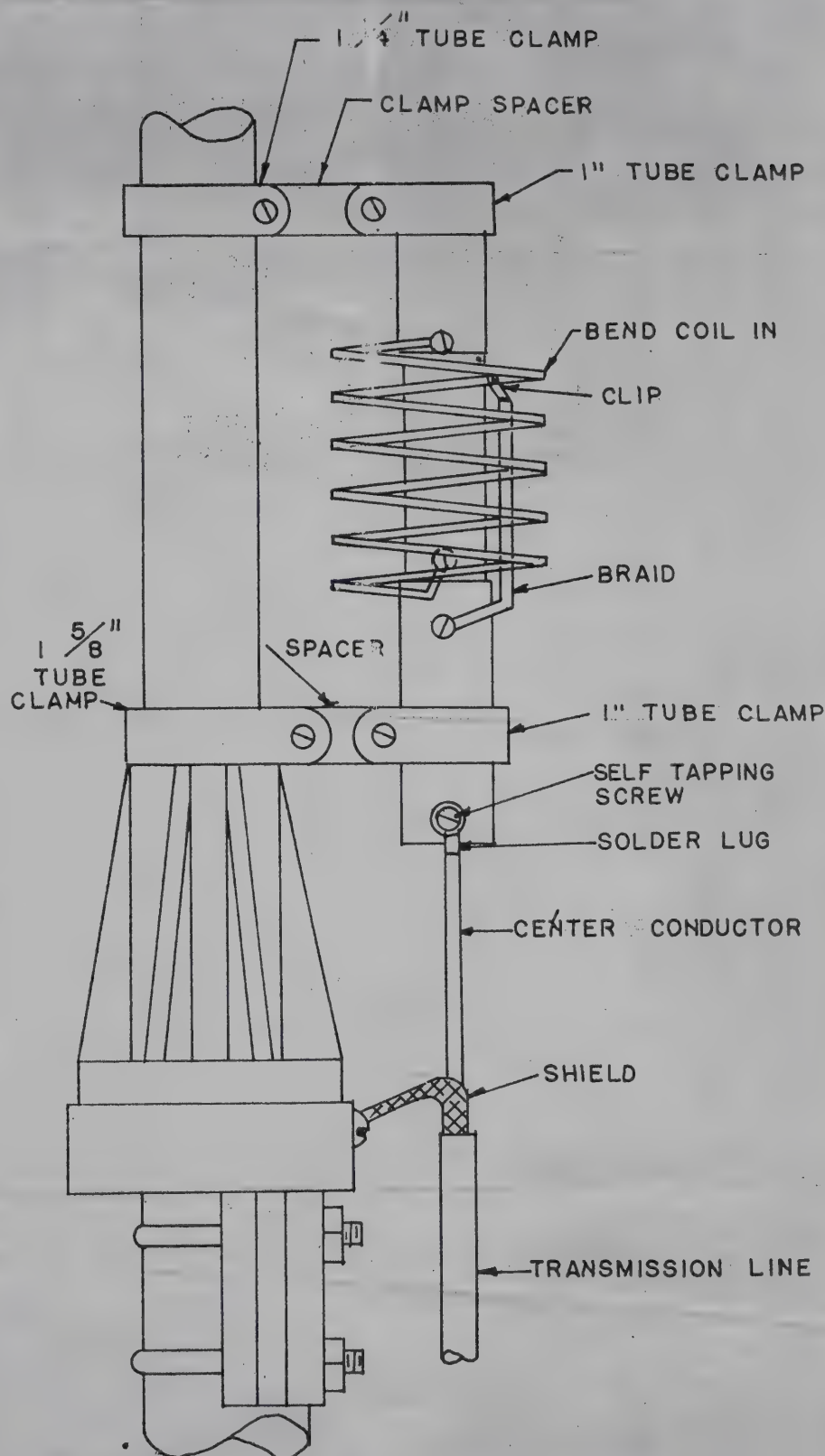


FIGURE 1

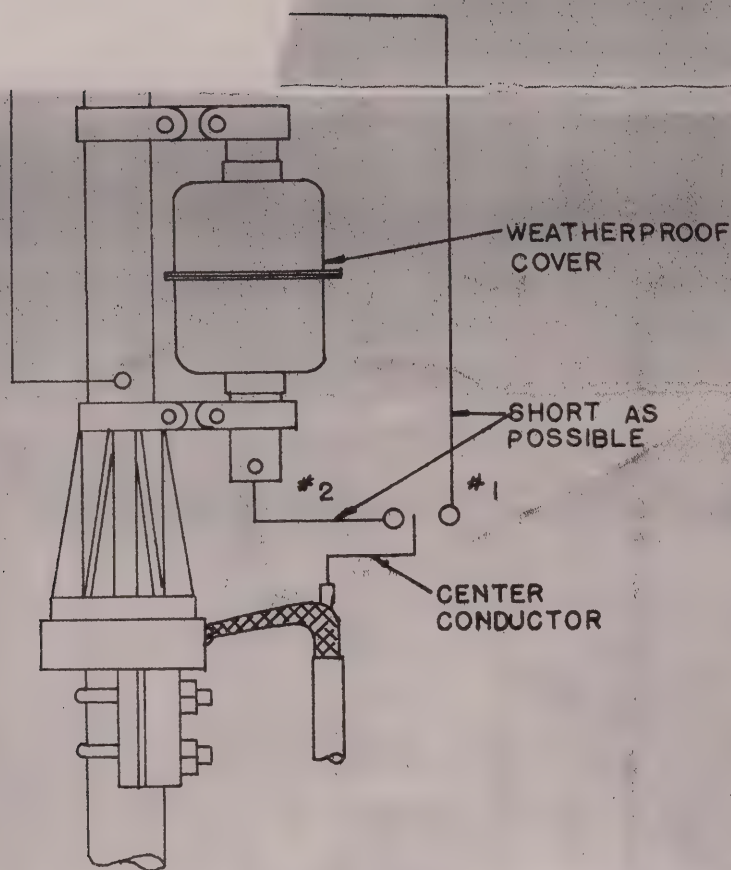
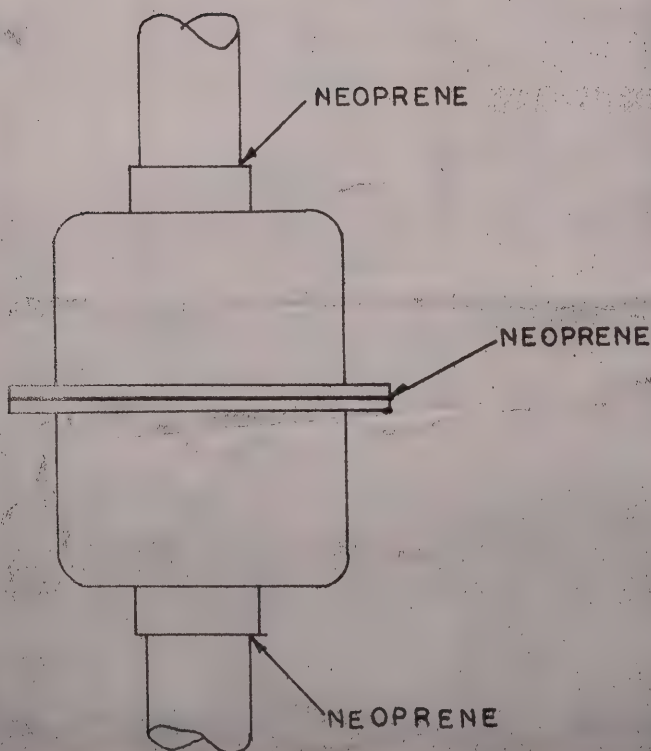


FIGURE 2



INSTRUCTIONS:

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Slide the two halves of the cover as far apart as possible and tap up and down on the coil until the proper tap point is found. It is suggested that you find this point by tapping on the outside of the coil. The wire at the point of the attachment may then be bent in toward the center of the coil and the braid and clip moved to that point, tapping the wire on the inside.

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A method for making the LC-80 automatic is shown in Figure 2, using a relay to switch the center conductor from #1 to #2. Other methods may suggest themselves to the users who wish the added convenience.

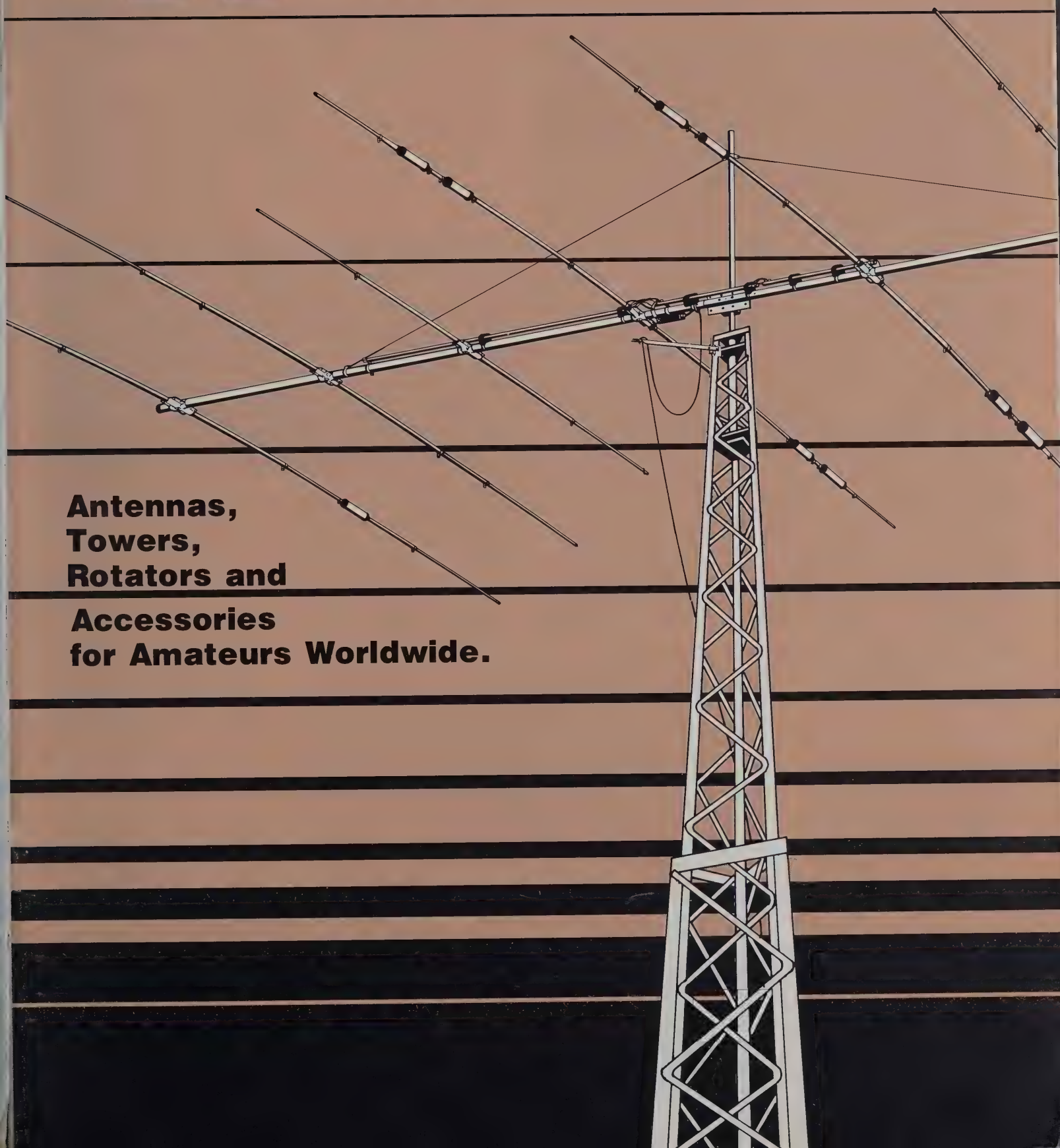
Coaxial or weather protected relays are suggested.

IMPORTANT:

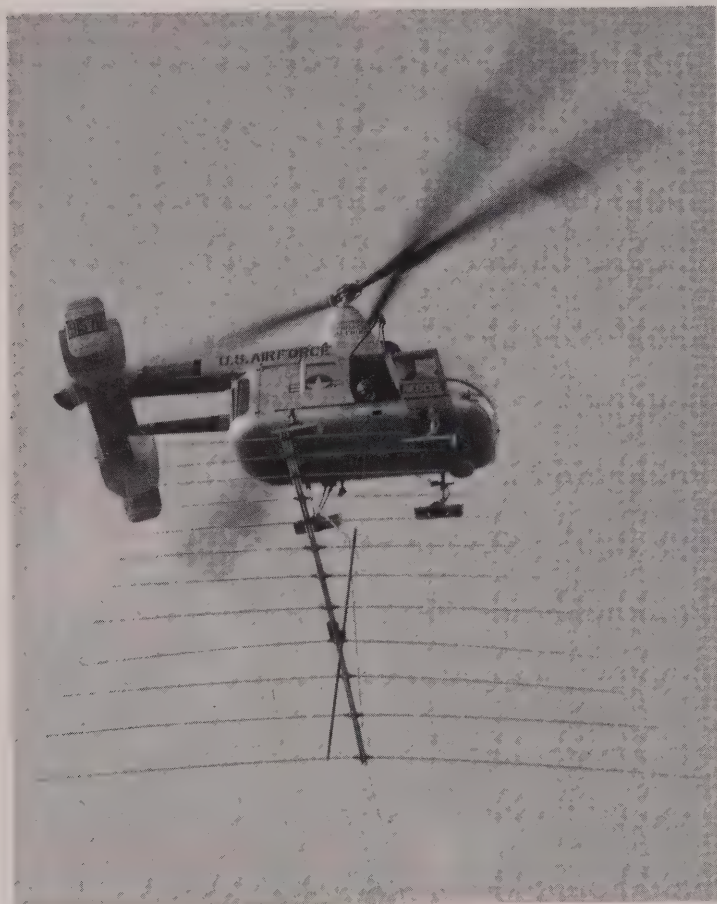
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hy-gain

**Antennas,
Towers,
Rotators and
Accessories
for Amateurs Worldwide.**



When you select a **Telex/Hy-Gain** product . . .



As a customer you benefit in many ways when you select Telex/Hy-Gain products. Some benefits are obvious, others may not be. For example, Telex is a well established manufacturer in such diverse fields as hearing aids, slide projectors, aviation headsets, or high speed audio cassette copiers. These and other products are sold world wide in over 80 countries. Obviously, the company has grown to its present size by delivering a reliable product and good service.

Of more immediate interest to you may be the fact that in 1978 Telex purchased the antenna portion of Hy-Gain Electronics. In 1981 the company acquired the antenna rotator systems portion of CDE. These acquisitions, and the development of an antenna tower line, indicate the company's commitment to the industry. It should be noted that Telex/Hy-Gain makes not only an extensive line of amateur radio antennas, rotators, and towers, but that it is also a major supplier of such products for commercial, industrial and



military applications. And so, as a large scale manufacturer we have facilities and capabilities that small factories simply do not have and cannot afford.

New Designs

Our staff of varied engineering disciplines is interfaced to advance the state-of-the-art. For example, wave propagation calculations are one of the largest variables in r.f. communications. It is a science heavily based on historical statistics of the characteristics of the earth's surface, effects of the sun on reflective layers of the ionosphere and many other fixed and variable parameters. Using computer programmed propagation predictions and analyses of radiation patterns we continue to improve on antenna designs. Other computer programs enable us to achieve reliable mechanical integrity through stress analyses and careful materials selection for antennas and towers.

Yet, we don't produce on theory alone. The Hy-Gain plant in Lincoln, Nebraska, is on a 35 acre (150,000 m²) government approved antenna test range. Here we test new designs under actual field conditions with sophisticated test equipment, measuring all conceivable performance parameters. All such test equipment is maintained by a regular calibration program for continuous accuracy.

Antenna Materials

Hy-Gain was among the first to select thick wall 6063-T832 aluminum tubing for antennas for maximum strength. All antenna order numbers that include an S (for example 395S for model Explorer 14) feature passivated stainless steel hardware that is corrosion resistant for long life.

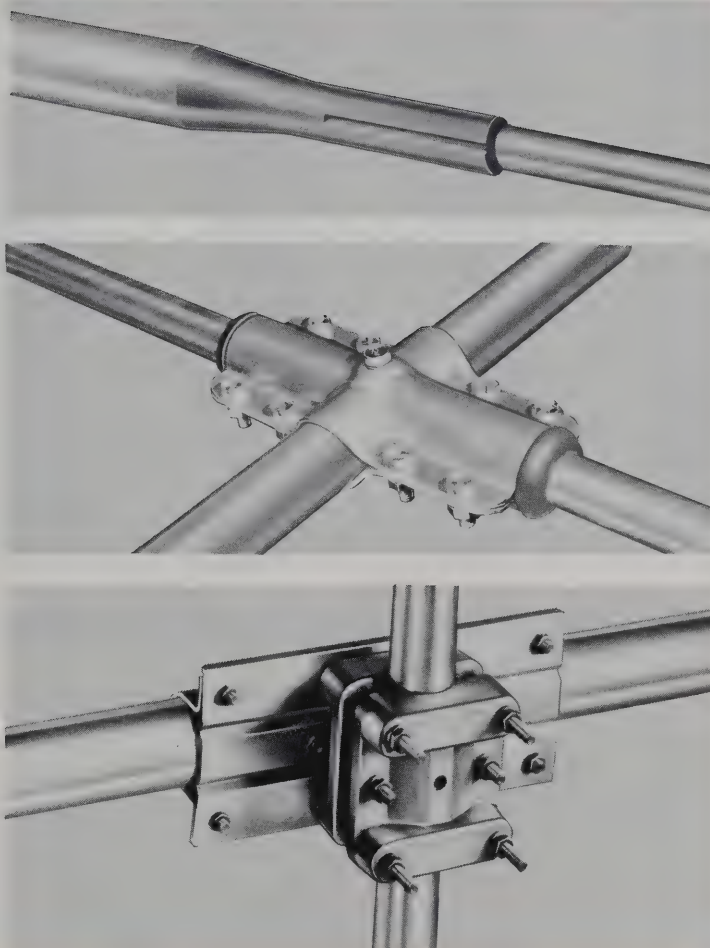
TELEX®

hy-gain

Tooled Manufacturing

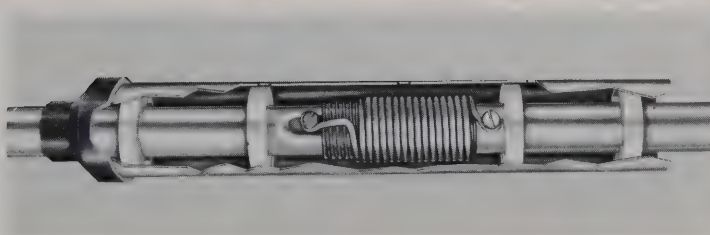
Dies and special tools for manufacturing are very expensive. That is why small antenna companies often use standard tubing and ordinary bolts, nuts and clamps to make their product. Such antennas usually are heavy, difficult to assemble, require repeated adjustments and sometimes even look crude.

Hy-Gain antennas feature tapered tubing that fits properly, is easily and securely clamped in place and reduces wind surface area. Our unique, die-cast aluminum tiltable boom-to-mast bracket or the element to boom compression clamps are made with specially tooled machinery to bring you a finished product. Plastic parts are precision made by injection molding. All tubing is deburred and cleaned for smooth and easy assembly.



Traps

Hy-Gain traps are individually tuned to within 0.10% of the resonant frequency. No other traps made come even close to this tolerance. Our single, heavy wire coil eliminates heat build-up for high radiation efficiency. It also allows full power rating on RTTY continuous duty.



Specifications and Manuals

Obviously all makes of antennas are advertised with high performance specifications. Hy-Gain's specifications and performance data for amateur antennas are conservatively based on the same standards applicable to commercial and military antennas. But, you don't have to take our word for it. Just read any of the test reports published in various amateur radio publications, or better still, ask another amateur who uses our product.

Hy-Gain manuals give detailed, step-by-step instructions with ample illustrations, charts, graphs and helpful hints. We've had compliments for our manuals even from competitors.

Customer Service

We always aim to provide the best possible service to you, before or after you purchase a Telex/Hy-Gain product. You can always write to our Amateur Radio Customer Service Department. Now we've added a Customer Service Hot Line Monday through Friday, 8 am - 4 pm Central Time. For technical information, trouble shooting or nearest dealer call toll free

1-800-328-3711

In Minnesota call 612-887-5528. To order parts for antennas or rotators call 1-402-467-5321.

Triband—Monoband—Duoband Directional Antennas

HF Antenna Specifications

ORDER NO.	MODEL NO.	MAXIMUM GAIN		FRONT-TO-BACK RATIO	NUMBER OF ELEMENTS	BANDWIDTH @ 2:1 VSWR		LONGEST ELEMENT	BOOM LENGTH		BOOM DIAMETER		TURNING RADIUS		MAXIMUM MAST DIAMETER ACCEPTED	BANDS	WIND LOAD @ 80 MILES PER HOUR (129 km./hr.)		MAXIMUM WIND SURVIVAL		SURFACE AREA		SHIPPING WT.	
		dB	dB			MHz	ft.		m.	ft.	m.	in.	mm.	ft.			m.	in.	mm.	Meters	lbs.	kg.	mph	km./hr.
391-S	TH7DX	9.6	27	7	—	31	9.4	24	7.3	2	50.8	20	6.1	2½	63.5	20, 15, 10	240	108.9	100	161	9.4	.87	82	37
395-S	EXP14	8.8	27	4	—	31.5	9.6	14.1	4.3	2	50.8	17.25	5.3	2½	63.5	20, 15, 10	192	86.1	100	161	7.5	.69	50	23
396-S	QK710	1.7	25*	1	—	42.5	12.9	—	—	—	—	21.25	6.5	—	—	40	210	95.3	80	50	8.2	.76	10	4.5
—	—	1.7	25*	1	—	31	9.5	—	—	—	—	17.25	5.3	—	—	30	205	93	80	50	8	.74	10	4.5
221-S	TH3JRS	8	25	3	—	27.4	8.3	12	3.7	1¼	31.8	14.3	4.4	2	50.8	20, 15, 10	87	39.5	80	128.7	3.4	.32	20	9
393-S	TH5Mk2	9	27	5	—	31.5	9.6	19	5.8	2	50.8	18.4	5.6	2½	63.5	20, 15, 10	190	86	100	160.9	7.4	.68	77	35
390-S	TH2Mk3S	5.5	20	2	—	27.3	8.3	6	1.8	2	50.8	14.3	4.4	2	50.8	20, 15, 10	83	37.6	80	128.7	3.3	.31	22	10
375-S	105BAS	12	34	5	1.5	18.5	5.6	24	7.3	2	50.8	15	4.6	2½	63.5	10	100	45.4	100	160.9	3.9	.36	29	13
376-S	155BAS	12	34	5	.4	24.5	7.5	26	7.9	2	50.8	17.5	5.3	2½	63.5	15	133	60.3	100	160.9	5.2	.48	42	19
377-S	205BAS	11.6	35	5	.5	36.5	11.1	34	10.4	2	50.8	25	7.6	2½	63.5	20	230	104.3	80	128.7	9	.84	77	35
394-S	204BAS	10	30	4	.5	36.5	11.1	26	7.9	2	50.8	22.5	6.7	2½	63.5	20	186	84.4	100	160.9	7.3	.68	55	25
371-S	DISC7-1	1.7	35*	1	.22	45	13.7	2.7	.66	2	50.8	22.5	6.7	2½	63.5	30, 40	69	31	100	160.9	2.7	.25	23	10.3
372-S	DISC7-2	6.5	15	2	.187	44.8	13.7	22.6	6.9	2	50.8	25	7.6	2½	63.5	40	154	69	80	128.7	6	.56	56.5	25.3
373-S	DIR	8.7	26	3	.160	45.6	13.9	35	10.79	2	50.8	28.7	8.8	2½	63.5	40	230	103	80	128.7	9	.84	98	44
LP1007	LP1007	13.5	14	12	—	38	11.6	26.5	8.1	—	—	22.5	6.9	2½	63.5	20, 17 15, 12, 10	442	200.5	80	128.7	17.3	1.61	335	152
LP1017	LP1017	10-12	10	17	—	40	12.2	37	11.3	—	—	25	7.6	2¼	57.1	40, 30, 20, 17, 15, 12, 10	850	385.6	80	160.9	33.2	3.1	635	288

*Front to side ratio

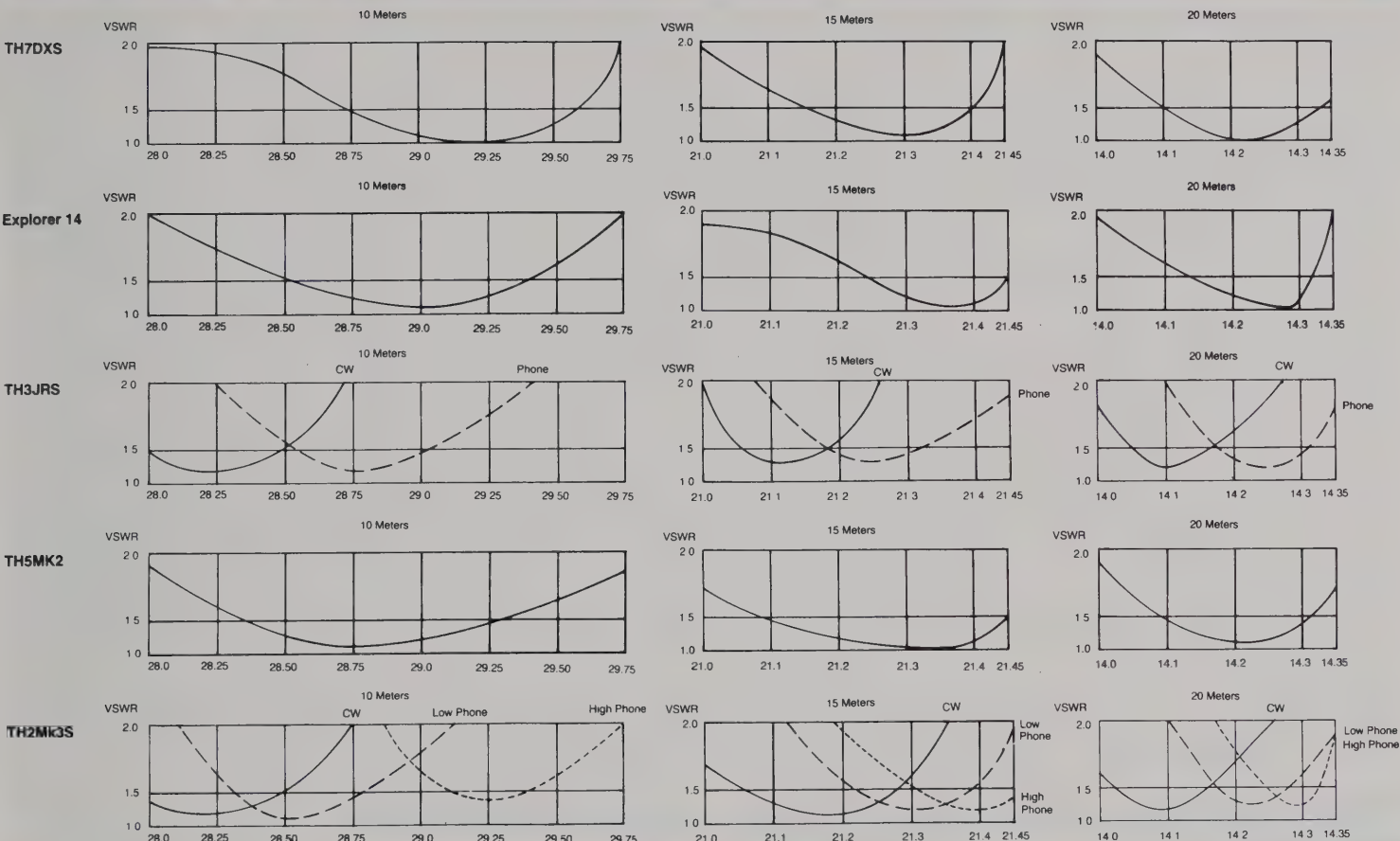
TELEX®

hy-gain

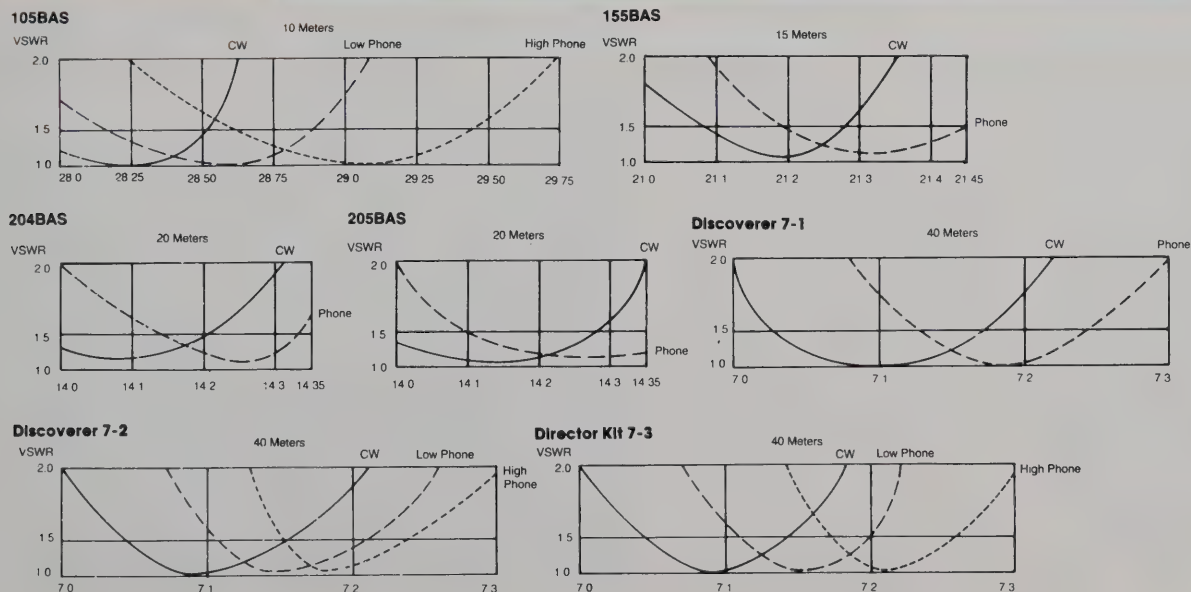
HF Directional Antenna SWR Curves

Measured at actual feed point

Multiband Beams



Monoband Beams



HF Tribanders World Famous Thunderbirds



TH7DX

7-Element, Broadband Triband Beam

This amazing new tribander, using a dual driven 7 element system on a 24' (7.3 m) boom maintains a VSWR of less than 2:1 on all bands, including ALL of ten meters. No compromise on

gain performance was needed to achieve this efficiency. A unique combination of trapped and monoband parasitic elements produces a front-to-back ratio of 27 dB. In a parasitic array such as this, high efficiency traps are used rather than parallel stubs. These Hi-Q traps are capable of handling the maximum legal

power with a 2:1 safety margin, and are superior to parallel stubbing for ease of assembly and maintenance. The TH7DX uses stainless steel hardware for all electrical—and most mechanical connections plus taper swaged 6063-T832 thick wall aluminum tubing. The antenna includes exclusive, die-

cast aluminum, rugged boom-to-mast clamp, and heavy gauge element-to-boom brackets. The TH7DX comes complete with a Hy-Gain BN-86 balun.

ORDER NO. 391S

Shipping Wt: 82 lbs. (37 kg)
UPS Shippable

Model 392S

Conversion Kit

You can convert your Hy-Gain TH6DXX to the new high performance broadband TH7DX. The conversion kit includes a complete stainless steel hardware package and complete easy-to-follow instructions.

ORDER NO. 392S

Shipping Wt: 20 lbs. (9 kg)
UPS Shippable

Balun

A Hy-Gain BN-86 balun is required but not supplied with the 392S conversion kit.

ORDER NO. 242

TH2Mk3S

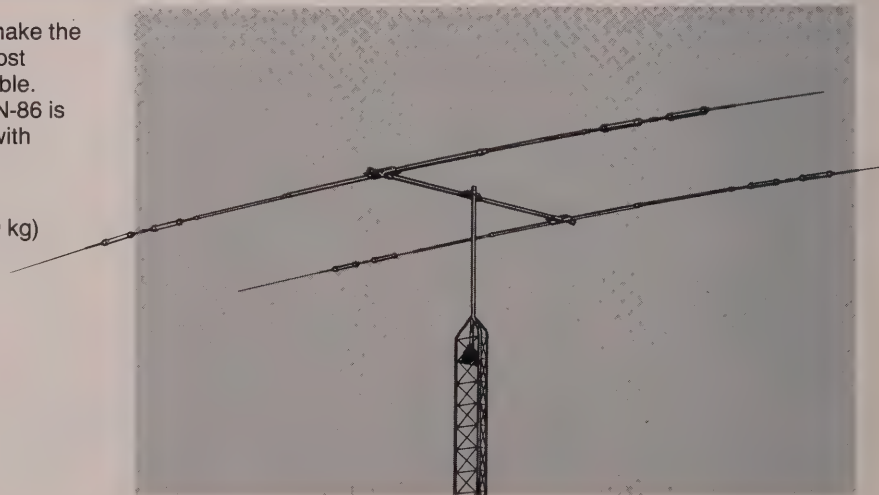
2-Element Triband Beam

Hy-Gain's Model TH2Mk3S is a ruggedly constructed, top-performing, compact tribander that installs almost anywhere, and can be rotated with a CD 45II or HAM IV rotator. Featuring air dielectric Hy-Q traps, which handle the maximum legal power. It feeds with 52 ohm coax, is Beta Matched for 5.5 dB gain, and delivers maximum F/B ratio without compromise. VSWR is less than 1.5:1 at resonance on all bands. Taper swaged, slotted tubing with stainless steel

hardware and clamps make the TH2Mk3S one of the most rugged antennas available. Hy-Gain ferrite balun BN-86 is recommended for use with TH2Mk3S.

ORDER NO. 390S

Shipping Wt: 22 lbs. (10 kg)
UPS Shippable



TELEX®

hy-gain



EXPLORER 14

Broadband Tribander Beam with Quad-Band Option

A unique Para-Sleeve concept optimizes edge-to-edge bandwidth on 20, 15 and 10 meters. Solid state transceivers load to full output with VSWR below 2:1 so no antenna tuner is needed. Handles maximum continuous legal power with a respectable safety margin. The revolutionary compact design requires only 17'3" (5.3 m) turning radius and the entire assembly fits on roof tripod, mast or medium duty tower. Truly competitive performance against giant tribanders at half the cost. Superior construction includes

stainless steel hardware, heavy gauge pre-formed element and mast brackets and thick wall swaged aluminum tubing. A BN-86 balun is included and a Beta Match provides DC ground to reduce lightning hazard and static. Rugged, easily assembled and so unique we've applied for a patent.

ORDER NO. 395S

Shipping Wt: 50 lbs. (22.7 kg)
UPS Shippable

Quad Band Option

Add a fourth band, either 30 or 40 meters to the Explorer 14 with the QK710 kit. Kit attaches to the driven element and is easily adjusted for either 30 meters (WARC) or 40 meters at minimal cost.

ORDER NO. 396S

UPS Shippable

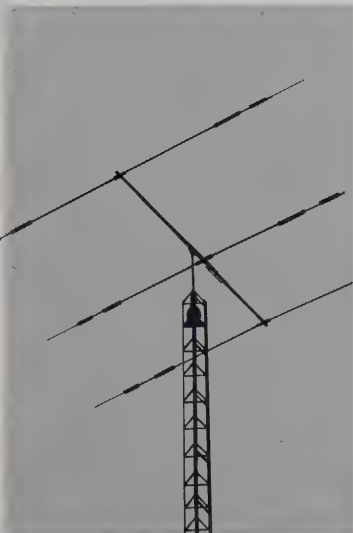
TH3JRS

3-Element Triband Beam

Hy-Gain's Thunderbird Junior offers top performance with a compact design that makes it ideal where space is a limiting factor. Featuring separate and matched air dielectric Hy-Q traps for each band, it feeds with 52 ohm coax, delivers maximum F/B ratio without compromise. The TH3JRS has a VSWR of less than 1.5:1 at resonance on all bands. All hardware and clamps are stainless steel. Maximum power, 300 watts CW and 600 watts PEP output. Hy-Gain ferrite balun BN-86 is recommended for use with the TH3JRS.

ORDER NO. 221S-1

Shipping Wt: 20 lbs. (9 kg)
UPS Shippable



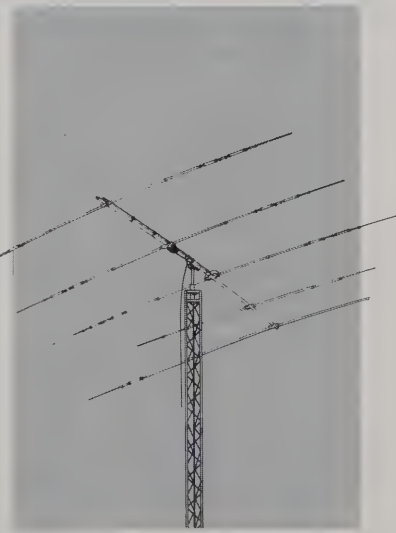
TH5Mk2

5-Element Broadband Triband Beam

The TH5 is now a BROADBAND TRIBAND! The TH5Mk2 offers an outstanding 9.0 dB gain. Separate air dielectric Hy-Q traps on each band allow the TH5Mk2 to be set on a F/B ratio of 27 dB with a minimum beam width. It features five elements on a 19' (5.8 m) boom with four active elements on 10, 15 and 20 meters. Also standard on the TH5Mk2 is Hy-Gain's exclusive Beta Match, and stainless steel hardware and compression clamps. A BN-86 ferrite balun is supplied.

ORDER NO. 393S

Shipping Wt: 77 lbs. (35 kg)
UPS Shippable



40 Meter **Discoverer Series**

*Dipole or
Monoband Beam*

When declining sunspot activity virtually eliminates operation on 20 meters, communications move to 40 meters. Hy-Gain offers you several options with wide bandwidth and Hi-Q efficiency without coils. A low voltage feed point eliminates insulator failure and assures that the antenna can handle twice the new U.S. legal power limits.

Discoverer 7-1

A rotatable dipole of low weight and wind surface area so it easily fits most existing beam installations. This antenna can be tuned to either, 30 or 40

meters with a front to side ratio of 30 dB for a fast, inexpensive expansion of band capability. Feeds with 52 ohm coax. Comes with pre-formed mast clamp.

ORDER NO. 371S

Shipping Wt: 23 lbs. (10 kg)
UPS Shippable

Discoverer 7-2

A two-element 40 meter beam with 6.5 dB gain, 15 dB F/B ratio and VSWR of 1.5:1 at resonance. A unique hairpin loading system delivers superior performance without high loss coils. Feeds with 52 ohm coax and comes

factory pretuned with Hy-Gain's exclusive Beta Match for reduced lightning hazard. Tilttable boom to mast bracket and stainless steel hardware is included. Hy-Gain ferrite balun BN-86 is recommended.

ORDER NO. 372S

Shipping Wt: 56.5 lbs. (25.3 kg)
UPS Shippable

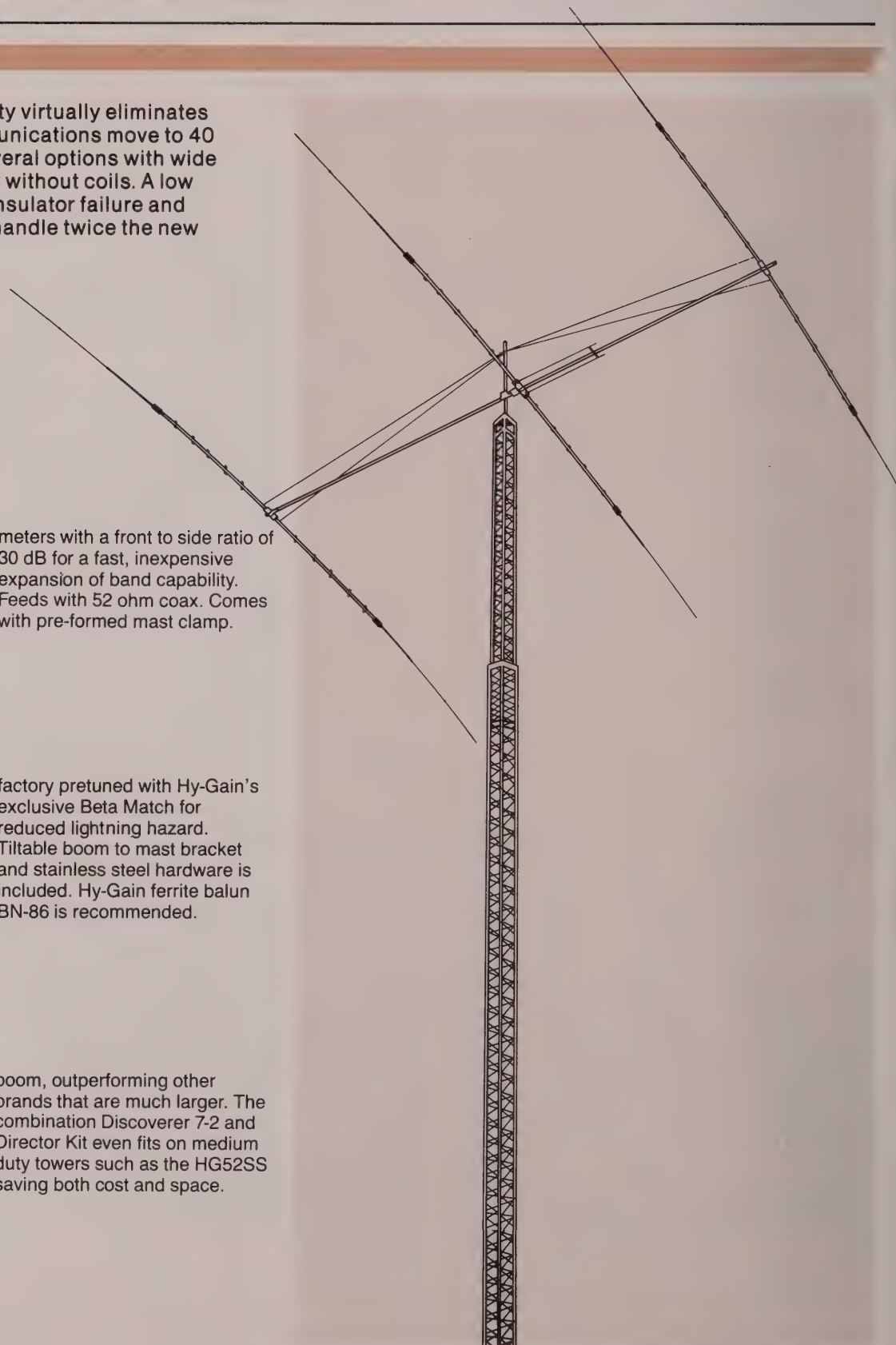
Director Kit 7-3

Converts the Discoverer 7-2 into a three-element beam with 8.7 dB gain and a F/B ratio of 26 dB; almost doubling the two-element performance. Even more amazing, it's all on a 35' (10.7 m)

boom, outperforming other brands that are much larger. The combination Discoverer 7-2 and Director Kit even fits on medium duty towers such as the HG52SS saving both cost and space.

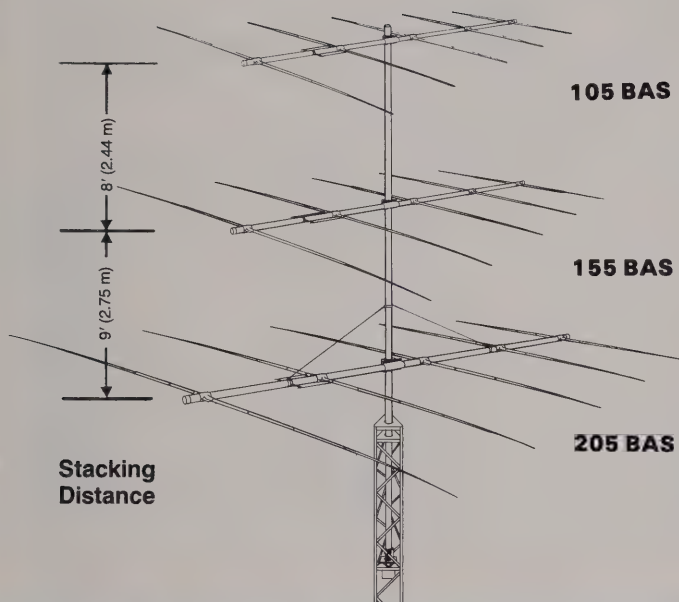
ORDER NO. 373S

Shipping Wt: 41.50 lbs. (18.8 kg)
UPS Shippable



HF Monobanders World Famous Long Johns

Minimal Weight—Maximum Strength



Stacking Distance

105BAS

10 Meter

Five elements on a 24' (7.3 m) boom. Exclusive 52 ohm Beta Match. A substantial 12 dB gain, with a F/B ratio of 34 dB. Excellent DC ground. Stainless steel hardware and clamps.

ORDER NO. 375S

Shipping Wt: 29 lbs. (13.2 kg)
UPS Shippable

205BAS

20 Meter

Five elements on a 34' (10.4 m) boom. Exclusive 52 ohm Beta Match. An impressive 11.6 dB gain, with a F/B ratio of 34 dB. Excellent DC ground. Stainless steel hardware and clamps.

ORDER NO. 377S

Shipping Wt: 77 lbs. (35 kg)
Motor Freight Only

155BAS

15 Meter

Five elements on a 26' (7.9 m) boom. Exclusive 52 ohm Beta Match. A 12 dB gain, and a F/B ratio of 34 dB. Excellent DC ground. Stainless steel hardware and clamps.

ORDER NO. 376S

Shipping Wt: 42 lbs. (19.1 kg)
UPS Shippable

BN-86 BALUNE

Broadband 50 ohm ferrite balun. Useable from 3 to 30 MHz. Recommended for all HF Yagi antennas. It provides improved front-to-back ratio. Comes with clamp to bolt to boom and S0239 connector.

ORDER NO. 242S



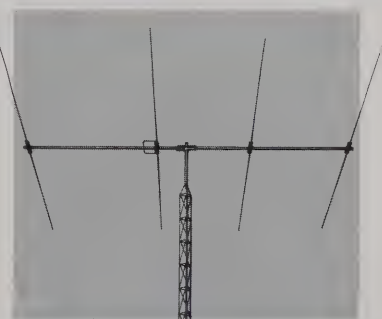
204BAS

20 Meter

Four elements on a 26' (7.9 m) boom. Feeds with 52 ohm coax and is Beta Matched for 10 dB gain. The 204BAS has a tiltable cast aluminum boom-to-mast clamp, heavy gauge machine-formed element-to-boom brackets and stainless steel hardware and clamps. BN-86 balun is recommended for use with model 204BAS.

ORDER NO. 394S

Shipping Wt: 55 lbs. (24.9 kg)
UPS Shippable



HF Log Periodics

LP-1007

for 20, 17, 15, 12 and 10 meters
The Hy-Gain LP-1007 provides continuous frequency coverage from 13 to 30 MHz with 13.5 dB gain, and may be operated in or out of the amateur bands with consistent results. Has a 26.5' (8.1 m) boom.

ORDER NO. LP-1007

Shipping Wt: 335 lbs. (152 kg)
Motor Freight Only



LP-1017

for 40, 30, 20, 17, 15, 12 and 10 meters
LP-1017 provides continuous frequency coverage across 6.2 through 30 MHz with 10-12 dB gain covering all of the 10 through 40 meter bands in a single system.

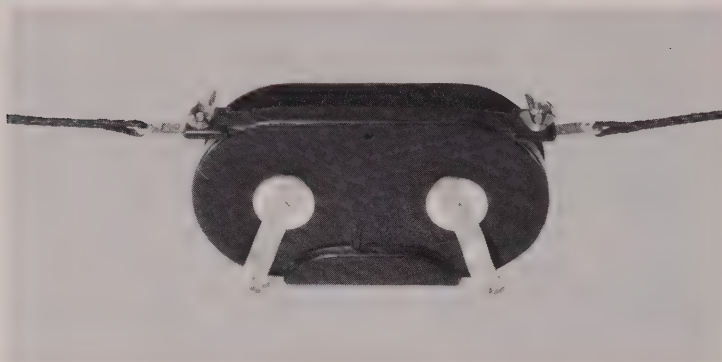
ORDER NO. LP-1017

Shipping Wt: 635 lbs. (288 kg)
Motor Freight Only



HF Doublets Antenna Accessories

HF Doublets



18TD

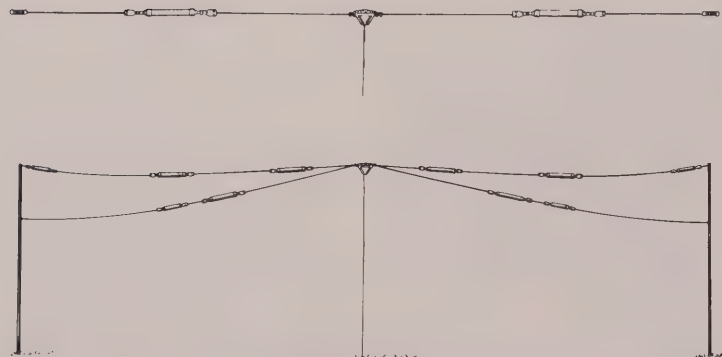
Reel Tape Portable Dipole

The Hy-Gain 18TD is a high performance, portable or semi-permanent doublet antenna system. A frequency-to-length conversion chart calibrated to frequency measurements on the tapes is integrated in the high

impact housing for fool-proof installation. Feeds with 52 ohm coax and measures 10" (254 mm) x 5 1/2" (140 mm) x 2" (50.8 mm) retracted. SO-239 input connector.

ORDER NO. 228

Shipping Wt: 4.1 lbs. (1.9 kg)



2BDQS and 5BDQS

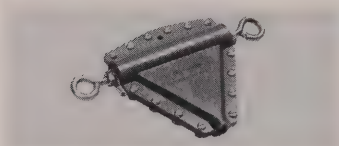
Multiband Hy-Q trap doublets 2BDQS for 80 and 40 meters maximum length of dipole, 101' (30.5 m). 5BDQS for 80 through 10 meters maximum length of dipole, 94' (28.7 m). The Hy-Gain 2BDQ are Hy-Q trap doublets designed for horizontal or inverted "V" high power

installations. Both feature individually pretuned matched traps for each band. 52 ohm feed. Co-axial cable not included.

ORDER NO. 380S (for 2BDQ)
Shipping Wt: 7.5 lbs. (3.4 kg)

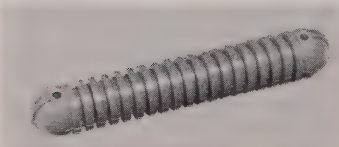
ORDER NO. 383S (for 5BDQ)
Shipping Wt: 12.2 lbs. (5.5 kg)

Accessories



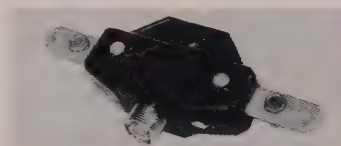
CI

Center insulator for multiband doublets. Accepts 1/4" or 3/8" coax.
ORDER NO. 155



EI

End insulators for multiband doublets. Pair of 7" (178 mm) heavily serrated end insulators.
ORDER NO. 156



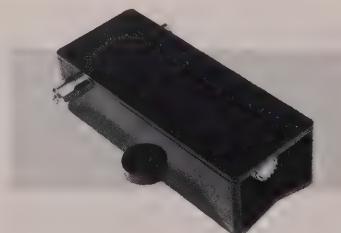
CIC

Center insulators for multiband doublets. With built in SO-239 connector.
ORDER NO. 157



LA-1

Lightning arrester. Useable for 1.8 to 54 MHz. Will safely by-pass to ground ten plus lightning strikes. SO-239 connector.
ORDER NO. 229



BN-86

Broadband 50 ohm ferrite balun. Useable from 3 to 30 MHz. SO-239 connector.
ORDER NO. 242

HF Multiband Verticals

Specifications

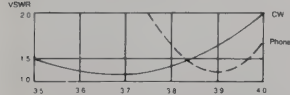
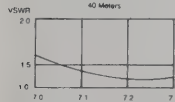
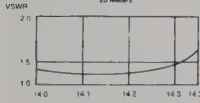
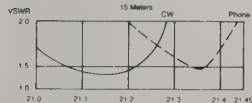
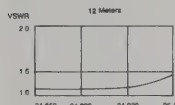
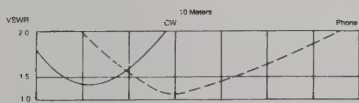
ORDER NO.	MODEL NO.	OVERALL LENGTH		MAXIMUM MAST DIAMETER ACCEPTED		BANDS	WIND SURVIVAL		SHIPPING WEIGHT	
		ft.	m	in.	mm		mph	km/hr.	lbs.	kg
182S	18HTS	50	15.2	Tower Supplied		80-10*	80	128	117	53
386S	18AVT/WBS	25	7.6	1 $\frac{5}{8}$	41.3	80-10	80	128	12	5.4
385S	14AVQ/WBS	18	5.5	1 $\frac{5}{8}$	41.3	40-10	80	128	8.2	3.7
193S	18VS	18	5.5	1 $\frac{5}{8}$	41.3	80-10	80	128	4.6	2.1
384S	12AVQS	13.5	4.1	1 $\frac{5}{8}$	41.3	20-10	80	128	7	3.1

* Includes new 12 meter WARC band without modifications. Optional kits available for 160 meter operation.

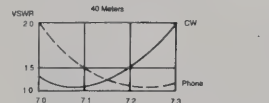
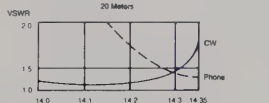
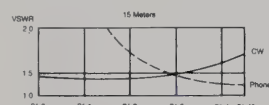
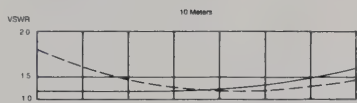
HF Vertical Antenna SWR Curves

Measured at actual feed point

18HTS

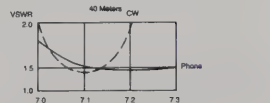
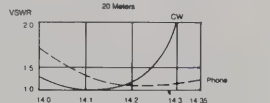
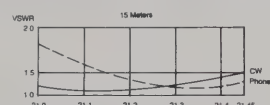


18AVT/WB

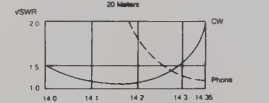
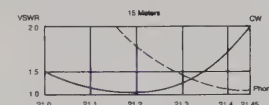
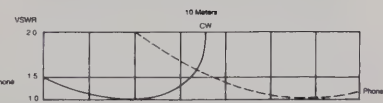


Note: The tip rod can be adjusted for any frequency from 3.5 mHz to 4.0 mHz.

14AVQ/WB



12AVQ/WBX



The CW curve is used with the LC 160Q coil option.

HF Multiband Verticals

18HTS

for 80 through 10 meters

The 18HTS features automatic band selection achieved through a unique stub decoupling system which effectively isolates various sections of the antenna so that an electric $\frac{1}{4}$ wavelength (or odd multiple of a $\frac{1}{4}$ wavelength) exists on all bands. Approximately 250 kHz band width at

2:1 VSWR on 80 meters. With the addition of a base loading coil, it also provides exceptional 160 meter performance. Includes all stainless steel hardware, and tilt-over base.

ORDER NO. 182S

Shipping Wt: 117 lbs. (53 kg)
Motor Freight Only

18HTS works on 24 MHz without modification. Kits available for 160 meter operation. MK160A and LC160Q.

18AVT/WBS

for 80 through 10 meters

Five band capability with automatic band switching is accomplished through the use of three improved Hy-Q traps featuring large diameter coils for a more favorable L/C ratio. 2:1 or lower SWR at band edges on 40-10 meters. Approximately 40 kHz band width below 2:1 VSWR on 80 meters. Includes all stainless steel hardware and SO239 input connector.

ORDER NO. 386S

Shipping Wt: 12 lbs. (5.4 kg)
UPS Shippable

14AVQ/WBS

for 40 through 10 meters

A self-supporting, automatic band switching vertical that delivers outstanding performance with exceptional L/C ratio and a very low

angle radiation pattern. Includes all stainless steel hardware and SO239 input connector.

ORDER NO. 385S

Shipping Wt: 8.2 lbs. (3.7 kg)
UPS Shippable

12AVQS

for 20, 15, and 10 meters

A completely self-supporting triband vertical antenna. It delivers exceptionally low angle radiation with 1.5:1 VSWR or less on all three bands. Includes all stainless steel hardware and SO239 input connector.

ORDER NO. 384S

Shipping Wt: 7 lbs. (3.2 kg)
UPS Shippable

18VS

80 through 10 meters continuous.

Also ideal for short wave listening.

This 18' (5.5 m) radiator has a loading coil at base that allows precision antenna resonating. The 18VS may be installed on a short $1\frac{5}{8}$ " (42 mm) diameter mast driven into the ground.

ORDER NO. 193S

Shipping Wt: 4.6 lbs. (2.1 kg)
UPS Shippable

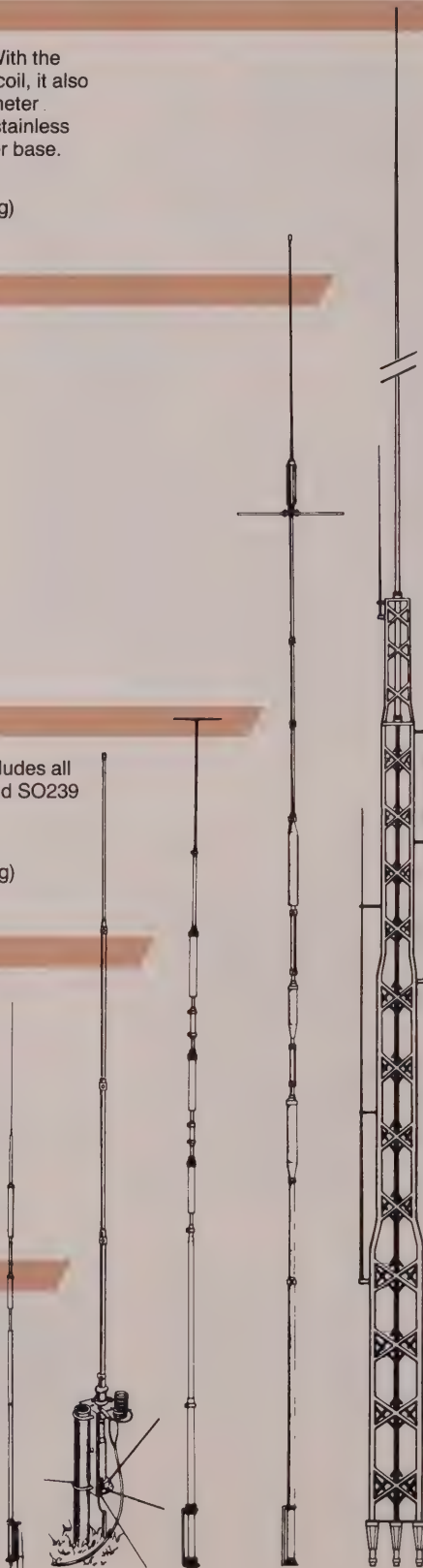
14RMQ

Roof Mounting Kit

The 14RMQ roof mounting kit provides rugged support for Hy-Gain Models 18AVT/WBS, 18VS, 14AVQ/WBS and 12AVQS. Kit includes base plate, mast, radial/guy wires, and mounting hardware.

ORDER NO. 184

Shipping Wt: 6.7 lbs. (3 kg)
UPS Shippable



VHF Beams and Verticals

Specifications

ORDER NO.	MODEL NO.	MAXIMUM GAIN		MHz	MAXIMUM FRONT-TO-BACK RATIO		NUMBER OF ELEMENTS	BANDWIDTH @ 2:1 VSWR		LONGEST ELEMENT	BOOM LENGTH		BOOM DIAMETER	TURNING RADIUS		MAXIMUM MAST DIAMETER ACCEPTED	BANDS	WIND LOAD @ 80 MILES PER HOUR (128 km/hr.)		MAXIMUM WIND SURVIVAL	SURFACE AREA		SHIPPING WT.	
		dB	dBi		ft.	m.		ft.	m.		ft.	m.		ft.	m.			lbs.	kg.		sq. ft.	m ²	lbs.	kg.
230S-1	64BS	12.7	25	4	2	9.9	3	12	3.7	1 1/4	31.8	8	2.4	2	50.8	6	28.2	12.8	100	160.9	1.1	.10	10	4.5
214S-1	214BS	13*	20	14	4	3.3	1	15.5	4.7	1 1/4	31.8	8	2.4	2	50.8	2	42.2	19.1	80	128.7	1.7	.16	7.5	3.4
208S-1	28BS	11.8*	20	8	4	3.3	1	12.3	3.4	1 1/4	31.8	6.25	1.9	2	50.8	2	32.3	14.6	80	128.7	1.3	.12	5.6	2.3
205S-1	25BS	9.1*	20	5	4	3.3	1	6.25	1.9	1 1/4	31.8	6.1	1.9	2	50.8	2	18.9	8.6	80	128.7	.74	.07	5	2.2
203S-1	23BS	6.1*	20	3	4	3.35	1	3.6	1.1	1 1/4	31.8	3.6	1.1	2	50.8	2	12.7	5.8	80	128.7	.50	.05	3	1.4
338	GPG-2A	3.4	—	1	4	4	1.2	—	—	—	—	—	—	1 5/8	41.3	2	—	—	100	160.9	.3	.03	2	.9
335S	V2S	3*	—	2	7	9.3	2.8	—	—	—	—	—	—	2	50.8	2	—	—	100	160.9	.67	.06	5.5	1.6
336S	V3S	3*	—	2	10	6.6	2	—	—	—	—	—	—	2	50.8	1 1/4	—	—	100	160.9	.5	.05	3.5	1.6
337S	V4S	3*	—	2	30	3.8	1.2	—	—	—	—	—	—	2	50.8	3/4	—	—	100	160.9	.28	.03	3.5	1.6

*These Hy-Gain antennas are realistically gain-rated against a standard dipole antenna (dBd) instead of a theoretical isotropic source. Add 2.2 dB for dBi

VHF Verticals

V2S

138-175 MHz
A 2-meter vertical, 3 dBd (5.2 dBi) gain derived from the famous extended double zepp antenna design. The radiating elements are two collinear 5/8 waves fed in phase. Two sets of 1/4 wave radials properly decouple the lower radiator from the mast.

ORDER NO. 335S

Shipping Wt: 3.5 lbs. (1.6 kg)
UPS Shippable

V3S

Same as V2S above except for 220-225 MHz.

ORDER NO. 336S

Shipping Wt: 3.5 lbs. (1.6 kg)
UPS Shippable

V4S

Same as V2S above except for 420-475 MHz. With type "N" connector.

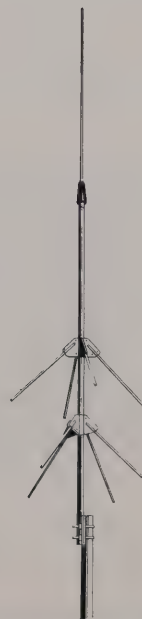
ORDER NO. 337S

Shipping Wt: 3.5 lbs. (1.6 kg)
UPS Shippable

V2S



V3S



V4S



Charts are included for pretuning to an exact frequency for amateur or commercial applications.

Charts are included for pretuning to an exact frequency for amateur or commercial applications.

VHF Beams

64BS

for 6 meters

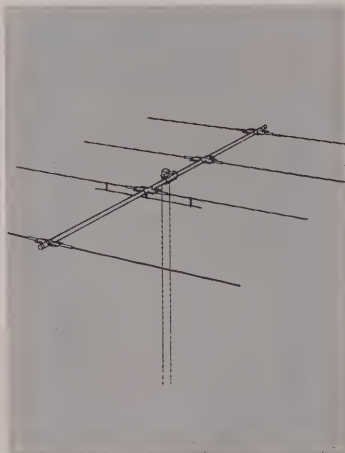
The 64BS and 66BS feature a concept in beam construction that provides actual delivered performance equalling maximum theoretical gain. The 4-element 64BS generates an impressive 12.7 dB gain and the 6-element 66BS increases the gain to an unprecedented 15 dB.

ORDER NO. 230S-1

(4-Element Beam)

Shipping Wt: 10 lbs. (4.5 kg)

UPS Shippable



VHF Beams mount horizontally or vertically.

23BS, 25BS, 28BS, 214BS

for 2 meters

These antennas include Hy-Gain's exclusive Beta Match to provide exceptional F/B ratio and maximum

obtainable gains. The 23BS (6.1 dB gain), 25BS (9.1 dB gain), 28BS (11.8 dB gain) and the 214BS (13 dB gain) gives you a wide choice of 2 meter beam performance from which to choose. Accepts up to 2" mast.

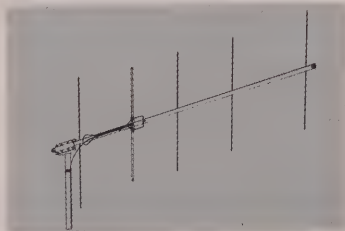


ORDER NO. 203S-1

(3-Element)

Shipping Wt: 3 lbs. (1.4 kg)

UPS Shippable

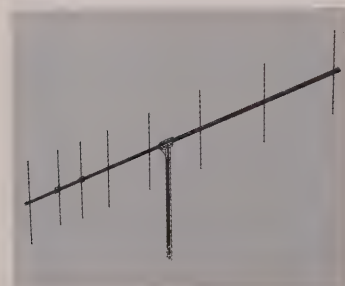


ORDER NO. 205S-1

(5-Element)

Shipping Wt: 5 lbs. (2.2 kg)

UPS Shippable

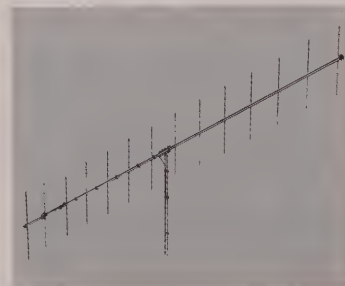


ORDER NO. 208S-1

(8-Element)

Shipping Wt: 5.6 lbs. (2.3 kg)

UPS Shippable



ORDER NO. 214S-1

(14-Element)

Shipping Wt: 7.5 lbs. (3.4 kg)

UPS Shippable

VHF Mobiles

HB-144-MAG

for 2 meters

A $\frac{5}{8}$ wave, 3 dB magnetic mount antenna with foldover feature.

ORDER NO. 287

HR-144-GRI

Ground Independent Marine Antenna for 2 meters

A 2-meter mobile or base antenna designed to operate independently of a ground plane. Minimizes pattern distortion, and maximizes range in all directions. Fiberglass-sealed antenna and feedpoint ensure top 3.9 dBd, 6 dBi performance.

ORDER NO. 270

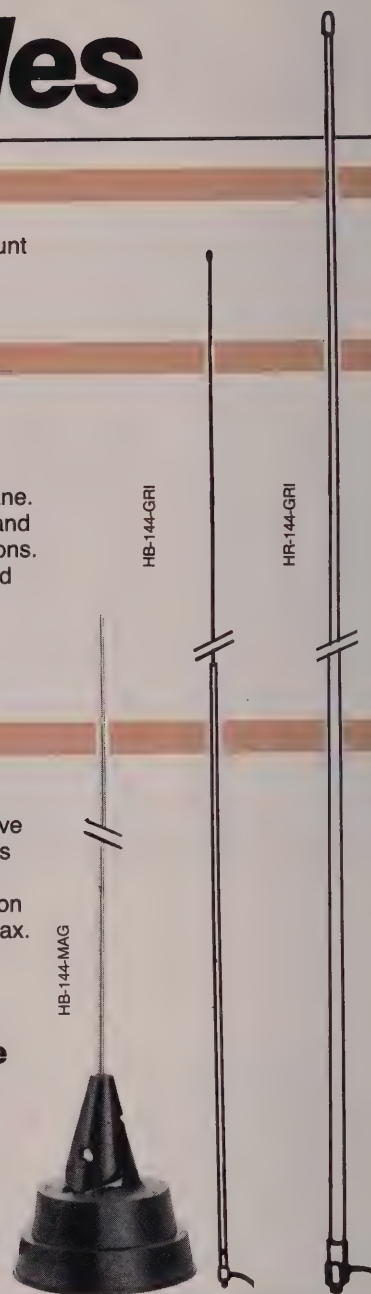
HB-144-GRI

Ground Independent for 2 meters

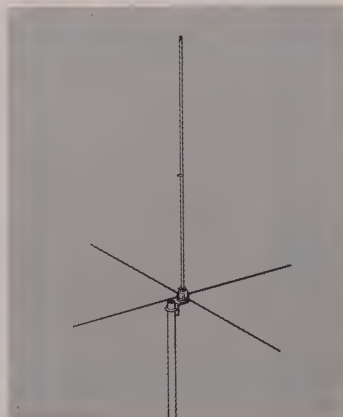
Same as the HR-144-GRI above except it has a white fiberglass bottom section with a 17-7 PH stainless steel tuneable whip on the top. Includes 2' (.61 m) coax.

ORDER NO. 285

Mobile Antennas are UPS Shippable.



GPG-2A



Collinear Ground Plane for 2 meters

This omnidirectional gain antenna for 2 meters is tuneable from 142 to 168 MHz. Delivers an omnidirectional gain of 3.4 dB.

ORDER NO. 338

Shipping Wt: 1 lbs. (.9 kg)

UPS Shippable

435 MHz • 145.9 MHz OSCAR Link Antenna

The OSCAR antenna is available as a complete system or as separate modules, each complete with the necessary phasing lines, relays and hardware. The complete system is carefully matched and balanced for superior performance.

The flexible design with switchable up/down link antennas is suitable for worldwide application. It includes left and right circularity switching to reduce fading (less than 3 dB ellipticity). Each antenna has high efficiency "T" matched driven elements. True RF switching relays are rated at 200 watts and improve VSWR for higher efficiency. Feed points are encapsulated and weather protected for long life. The crossboom, made entirely of fiberglass, maintains the integrity of the circularity pattern and eliminates the interaction problems often found with metal booms. The MIL-spec coax balun comes with a Teflon dielectric and outer covering. Silver plated braid shield and center conductor assure durability and minimum attenuation.

The 70 cm antenna is based on 4.2 wavelength NBS design (NBS Tech Note 688). The 2 meter antenna has logarithmic element spacing for a high attenuation of side lobes.

For years of maintenance-free operation, the elements come with positive locking rings of stainless steel and UV stabilized insulators.

Mechanically the entire system or the separate antennas are well balanced, require only a small turning radius, and exert minimal stress on the elevation rotators.



Complete OSCAR Link Antenna System

ORDER NO. 218S

Shipping Wt. 17 lbs. (7.7 kg)
UPS Shippable

2 meter 145.9 MHz Antenna

ORDER NO. 216S

Shipping Wt. 7 lbs. (3.2 kg)
UPS Shippable

70 cm 435 MHz Antenna

ORDER NO. 215S

Shipping Wt. 6 lbs. (2.7 kg)
UPS Shippable

Heavy-Walled Fiberglass Crossboom

O.D. 1½" (38 mm),
Length 60" (1.52 m)

ORDER NO. 217

Shipping Wt. 5 lbs. (2.3 kg)
UPS Shippable

Specifications

Mechanical	2 m Antenna	70 cm Antenna
Number of Elements	16	30
Boom Length	170" (432 mm)	122" (310 mm)
Boom O.D.	1.25" (32 mm)	1.125" (29 mm)
Mounting	Center	Center
Wind Surface Area	1.5 sq. ft. (.140 m ²)	.7 sq. ft. (.065 m ²)
Weight	7 lbs. (3.2 kg)	6 lbs. (2.7 kg)
Electrical		
Center Frequency	145.9 MHz	435 MHz
Band Width	144-148 MHz	432-438 MHz
Gain	11.5 dBd	14 dBd
Beam Width	42°	28°
Front-to-Back Ratio	27 dB	25 dB
Ellipticity	3 dB max.	3 dB max.
Power Rating	200 W PEP	200 W PEP
Polarity Switchable	Supplied	Supplied
Connector	UHF, SO-239	"N"

Antenna Towers

ORDER NO.	MODEL NO.	NUMBER OF SECTIONS	MATERIAL (ALL STEEL)	HEIGHT EXTENDED		HEIGHT RETRACTED		WIDTH AT BASE		WIND LOAD LIMIT @ 50 mph (80.5 km./hr.)		SHIPPING WT.	
				ft.	m.	ft.	m.	in.	mm.	sq. ft.	m ²	lbs.	kg.
125-1	HG-52SS	3	A500-A36 and A570	52	15.8	21	6.4	16.44	417.6	9.5	.8	455	206
129	HG-37SS	2	A500-A36 and A570	37	11.3	20.5	6.2	13.75	349.3	9.5	.8	265	120
130-1	HG-54HD	3	A500-A36 and A570	54	16.5	21.5	6.6	19.53	496.1	16*	1.5*	575	261
131-1	HG-70HD	4	A500-A36 and A570	70	21.3	21.5	6.6	22.63	574.7	16*	1.5*	1100	499

*These towers windload rated at 60 mph (96.6 km./hr.)

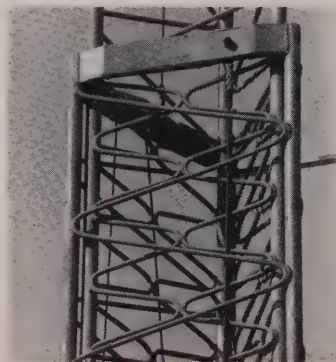
Self-Supporting Crank-Up Towers

Hy-Gain's rugged self-supporting crank-up towers are made of steel and are galvanized after welding to ASTM material standards. Open end tubular steel legs are galvanized inside and out and permit unrestricted moisture drainage. Giant welding fixtures assure straight and true alignment of the tower sections for close tolerance crank-up guide systems. These towers can be extended with a manual winch (included) or with an electric winch. A highly recommended option is the thrust bearing, which can be bolted

to the tower's top section to accept masts of up to 2 $\frac{3}{16}$ " (55 mm) diameter. All Hy-Gain towers are complete with base hinge, foundation steel-cage and a pre-drilled rotator mounting plate. These towers require no guying and conform to EIA specifications and the Uniform Building Code. They are also approved by the city of Los Angeles under Los Angeles fabrications license no. 1095. UBC documents for building permits are available on request (specify tower model) before purchasing a tower.

Diamond-Web Bracing means more strength where it's needed most

The "diamond web" or "double w" lattice brace configuration is used in Hy-Gain towers for added strength where the sections overlap. The diamond web design has 2 $\frac{1}{2}$ times the strength of the common "W" brace. When the tower is in its fully extended position, the wind load capacity is between 50 and 60 miles per hour (at its full rated load) depending on model.



TELEX®

hy-gain

4 SECTIONS

3 SECTIONS

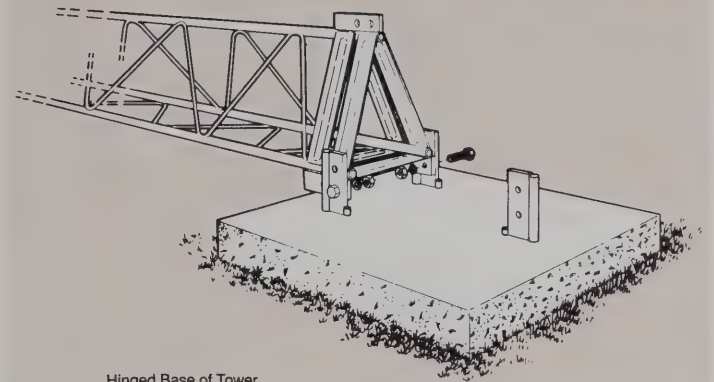
2 SECTIONS

HG-37SS
Recommended Rotator:
HAM IV

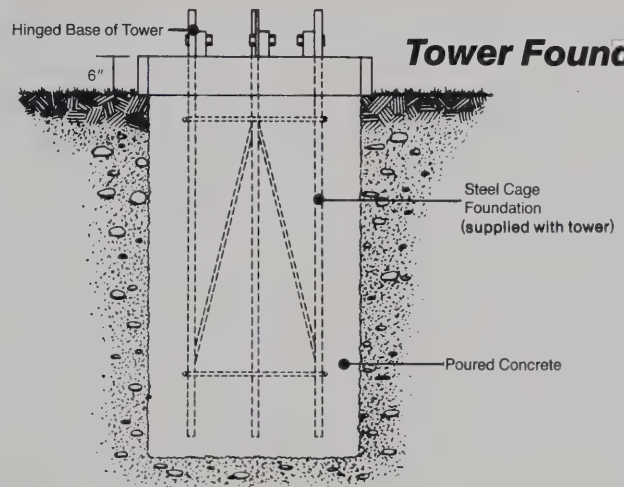
HG-52SS
Recommended Rotators:
HAM IV, HDR 300

HG-54HD
Recommended Rotators:
HAM IV, T²X, HDR 300

HG-70HD
Recommended Rotators:
HAM IV, T²X, HDR 300



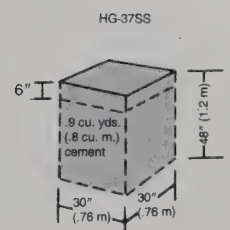
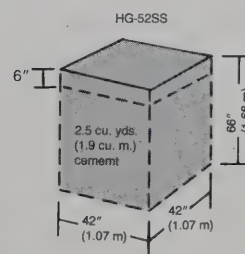
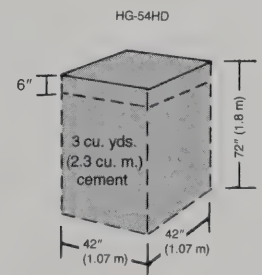
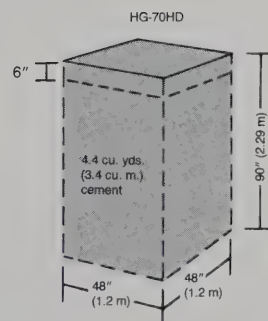
Hinged Base of Tower



Tower Foundation

Concrete Base Dimensions

Include 6" of concrete above ground.



Tower Accessories

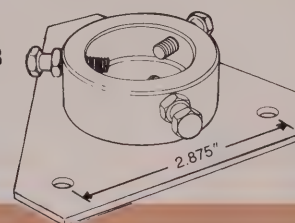
ORDER NO.	MODEL NO.	DESCRIPTION
116	HG-5	5' (1.52 m) mast*
117	HG-10	10' (3.05 m) mast*
118	HG-15	15' (4.57 m) mast*
121B	HG-TBT	Thrust bearing with sleeve
122	HG-COA	Coax arm for tower legs One required per section
140	HG-GP	Gin pole

*Masts 2" (50.8 mm) O.D. of 0.120" (3.05 mm) wall steel

Thrust Bearings

For use of masts up to 2 $\frac{9}{16}$ " (55 mm) diameter. Can be bolted to all Hy-Gain Crank-Up Towers. Easy installation with 3 bolts and lockwashers.

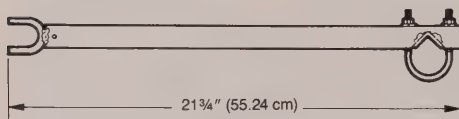
ORDER NO. 121B
BRONZE/OIL BEARING



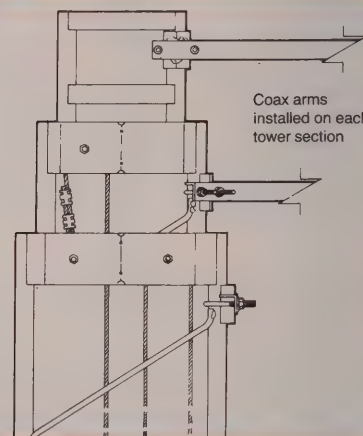
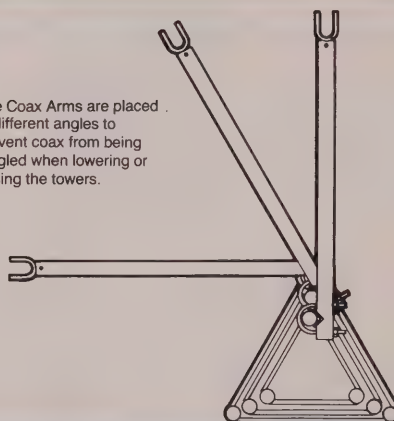
Coax Arms

The coax arm is 21 $\frac{3}{4}$ " (70 mm) in length and can be easily attached to a range of tower leg sizes up to 1 $\frac{1}{2}$ " (38 mm) diameter. This arm will fit any Hy-Gain Crank-Up series tower as well as other towers.

ORDER NO. 122



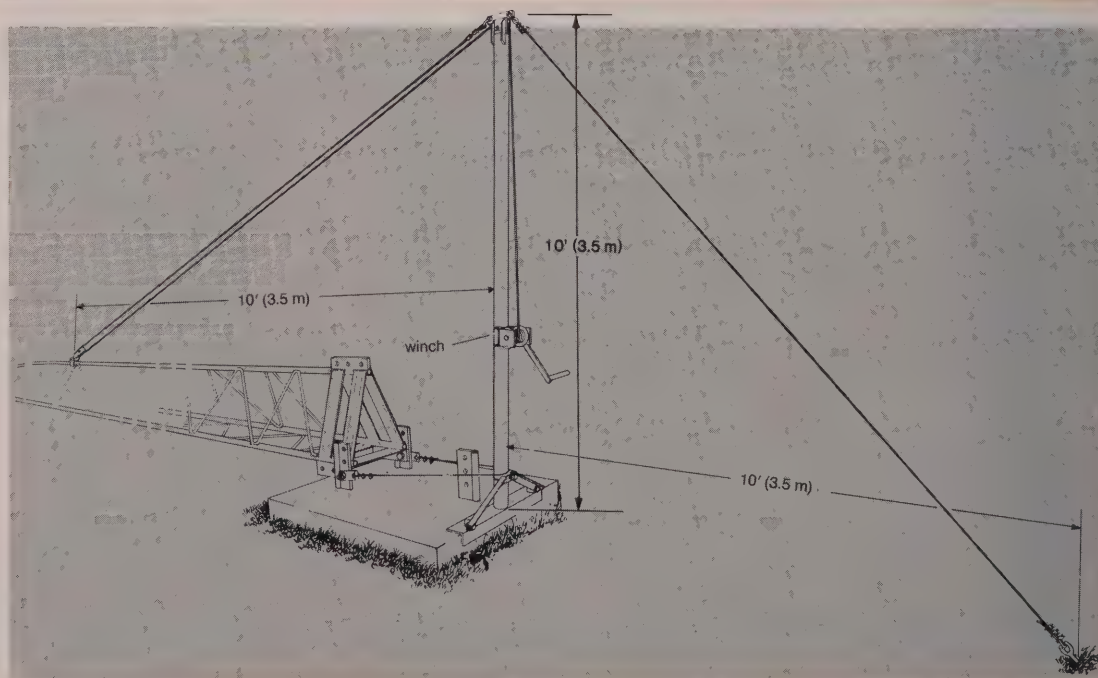
The Coax Arms are placed at different angles to prevent coax from being tangled when lowering or raising the towers.



Gin Pole

The Gin Pole can be used on all Hy-Gain Crank-Up Series Towers. The bottom of the gin pole rests on the concrete base of the tower and is held in place by a cable attached to the tower base bolts. The top is guyed to a screw type earth anchor making it possible to raise and lower the tower with ease.

ORDER NO. 140



Antenna Rotators

Specifications

ORDER NO.	MODEL NO.	ANTENNA WIND LOAD AREA CAPACITY (MOUNTED INSIDE TOWER)		ANTENNA WIND LOAD AREA CAPACITY (WITH LOWER MAST ADAPTOR)		MOTOR TURNING POWER-STALL TORQUE		BRAKE POWER AMOUNT OF TORQUE TO HOLD ANTENNA		BRAKE CONSTRUCTION	BEARING ASSEMBLY	MOUNTING HARDWARE	CONTROL CABLE REQUIRED	SHIPPING WT.
		sq. ft.	m ²	sq. ft.	m ²	in. lbs.	N•m	in. lbs.	N•m					
300	HDR 300	25	2.3	—	—	5000	565	7500	850	Solenoid Operated Locking Brake	Bronze Sleeve w/Roller Bearings Permanently Lubricated	Stainless Steel Bolts	7	25
303	T ² X	20	1.9	10	—	1000	113	9000	1017	Electric Wedge	Triple Race 138 Ball Bearings	Clamp Plate; Stainless U-Bolts	8	12.7
304	HAM IV	15	1.4	7.5	—	800	90	5000	565	Electric Wedge	Dual Race 98 Ball Bearings	Clamp Plate; Stainless U-Bolts	8	11
302	CD45 II	8.5	.79	5.0	.46	600	68	800	90	Disc Brake	Dual Race 48 Ball Bearings	Plated Mast Clamps; Stainless U-Bolts	8	10
305	AR 40	3.0	.28	1.5	.14	350	40	450	51	Disc Brake	Dual Race 12 Ball Bearings	Plated Mast Clamps; Stainless U-Bolts	5	6.4
R3501	R3501	45	4.2	—	—	9000	1016	23000	2596	Chain Drive	Collar/Roller Bearing	1/2" Plated Hardware	7	150

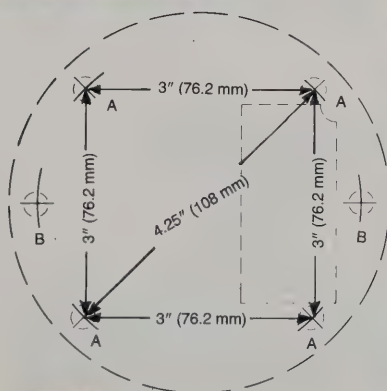
HF antennas with booms in excess of 26' (8 m) should use HDR300 or R3501

Template Bell-Housing Rotators

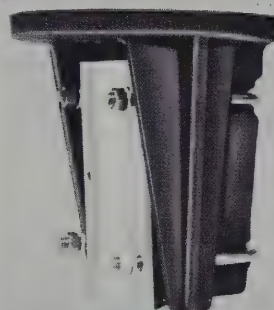
Clearance holes to be 11/32" (8.7 mm)

Use holes "A" for Models HAM IV, AR 40

Use holes "A & B" for Model T²X



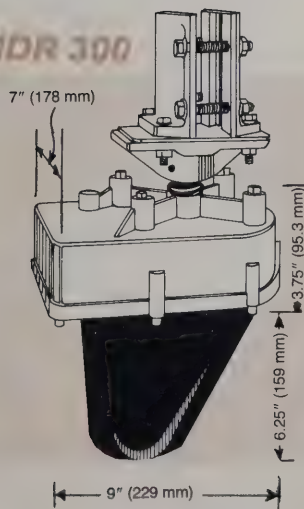
Lower Mast Support for HAM IV, T²X



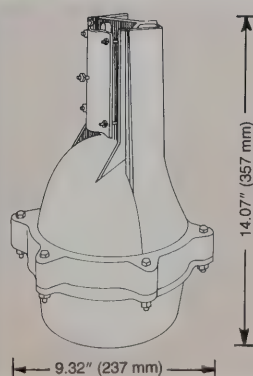
Accepts 1 7/8" to 2 5/8" O.D. pipe. Centers on 2 1/2".

ORDER NO. 5146710

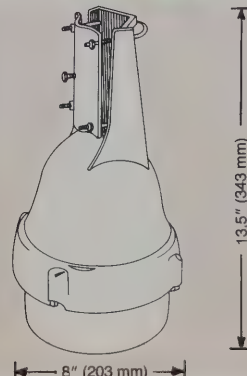
HDR 300



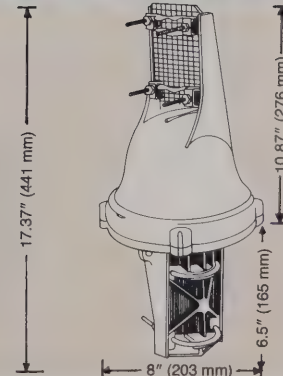
T²X



HAM IV



AR 40 and CD 45II



Antenna Rotators

HDR-300

This rotator is capable of handling king-sized antenna arrays of up to 25 sq. ft. (2.3 m²) wind load area.

- Thickwall Castings—handles largest loads
- Sleeve Bearings—permanently lubricated
- Superior, heavy duty steel clamps, self centering
- Solenoid Operated Locking Brake—securely locks antenna in place
- Digital Directional Indicator—accurate to 1°
- Separate Brake and Rotation Controls—provides longer rotator life
- Low Voltage Control—safe operation
- Maximum mast size 3" (76 mm)



ORDER NO. 300
(120/220 Vac 50/60 Hz)
Shipping Wt: 55 lbs. (25.0 kg)
UPS Shippable

T²X Tailtwister

The world famous Tailtwister is capable of handling antennas with wind load areas of 20 sq. ft. (1.9 m²).

- Thickwall Castings—handles large loads
- 138 Ball Bearings—large load capacity
- Triple Bearing Race—exceptional lateral control
- Six-Bolt Assembly—superior strength
- Machined Steel Ring Gear—long life with maximum load
- Machined Steel Drive Gear System—time tested durability
- Electric Locking Wedge—securely locks antenna in place
- North or South Center Scale—marked on both sides of plate.
- Illuminated Directional Indicator—easily locates antenna
- Snap-Action Control Switches—lifetime operation
- L.E.D. Control Indicators—positive operational signals
- Zener Regulated Meter Circuit—accurate positional readout
- Low Voltage Control—safe operation
- Maximum mast size 2-1/16" (52 mm)

ORDER NO. 303
(120 Vac 60 Hz)

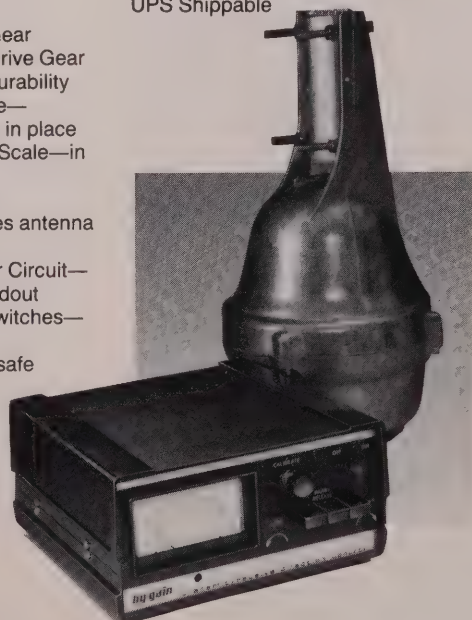
ORDER NO. 303-2
(220 Vac 50 Hz)
Shipping Wt. for either: 28 lbs. (12.7 kg)
UPS Shippable



HAM IV

Designed for medium communications antenna array of up to 15 sq. ft. (1.4 m²) wind load area.

- Bell Rotator Design—total weather protection
- Dual 98 Ball Bearing Race—proven support system
- Machined Steel Ring Gear
- Machined Steel Ring Drive Gear System—time tested durability
- Electric Locking Wedge—securely locks antenna in place
- North or South Center Scale—in unit
- Illuminated Directional Indicator—easily locates antenna position
- Zener Regulated Meter Circuit—accurate positional readout
- Snap-Action Control Switches—lifetime operation
- Low Voltage Control—safe operation
- Maximum mast size 2-1/16" (52 mm)



ORDER NO. 304
(120 Vac/60 Hz)
ORDER NO. 304-2
(220 Vac/50 Hz)
Shipping Wt: 24 lbs. (11.0 kg)
UPS Shippable

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hy-gain

CD 45II

Value packed with professional features. The CD45II will handle 8.5 sq. ft. (.79 m²) when mounted inside a tower, or 5 sq. ft. (.46 m²) when mast adaptor is used.

- Bell Rotator Design—total weather protection
- Dual 48 Ball Bearing Race—proven support system
- Diecast Ring Gear
- Stamped Steel Gear Drive System—heavy-duty, trouble-free gear train
- North or south center scale—in unit
- Illuminated Directional Indicator—easily locates antenna position
- Snap-Action Control Switches—lifetime operation
- Low Voltage Control—safe operation
- Maximum mast size 2-1/16" (52 mm)

ORDER NO. 302
(120 Vac/60 Hz)

ORDER NO. 302-2
(220 Vac/50 Hz)
Shipping Wt: 22.0 lbs. (10.0 kg)
UPS Shippable



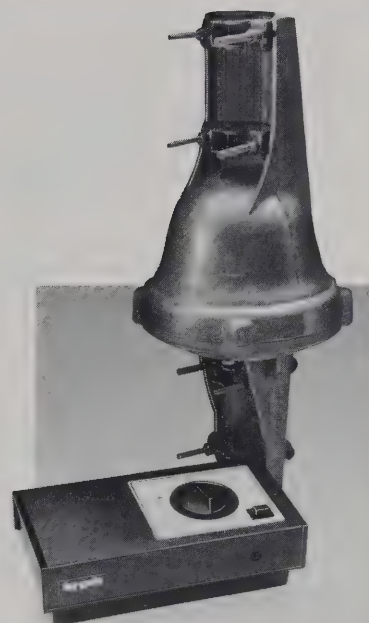
AR40

For large FM-TV and compact communication antenna arrays up to 3.0 sq. ft. (.28 m²) wind load area.

- Dual 12 Ball Bearing Race—exclusive in its class
- Automatic Position Sensor—never needs resetting
- Fully Automatic Control—just dial and touch for any desired location
- Solid-State Control—silent operation
- Low Voltage Control—safe operation
- Maximum mast size 2-1/16" (52 mm)

ORDER NO. 305
(120 Vac/60 Hz)

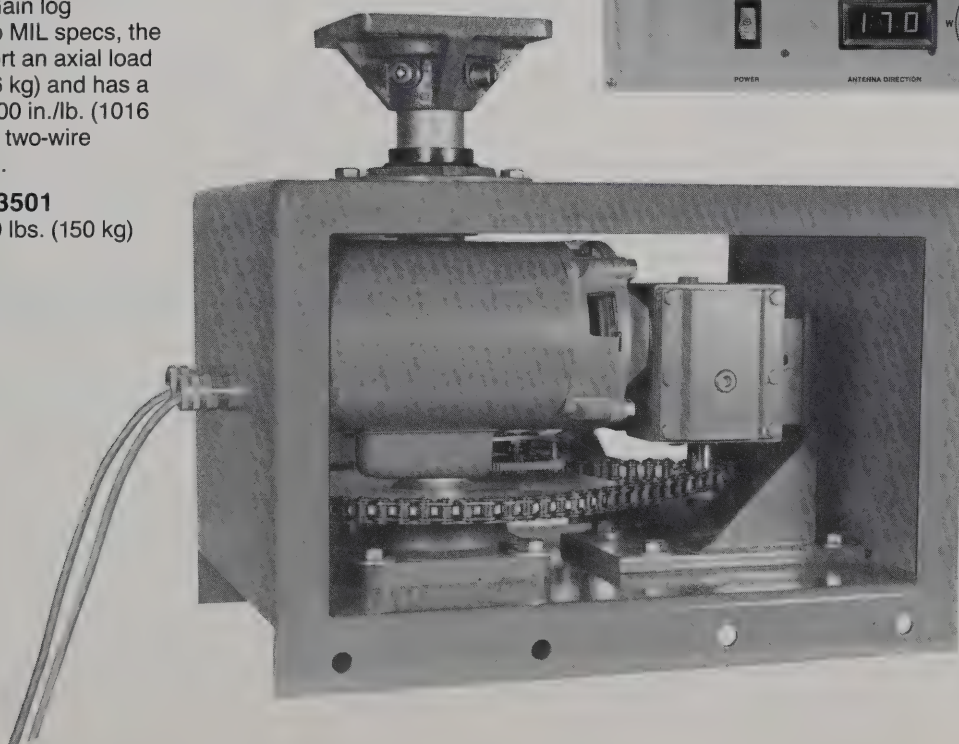
ORDER NO. 305-2
(220 Vac/50 Hz)
Shipping Wt: 14 lbs. (6.4 kg)
UPS Shippable



R3501

The R3501 is a universal rotator designed for heavy duty commercial antenna systems such as the Hy-Gain log periodics. Built to MIL specs, the R3501 will support an axial load of 1000 lb. (453.6 kg) and has a stall torque of 9000 in./lb. (1016 N•m) Capable of two-wire remote operation.

ORDER NO. R3501
Shipping Wt: 330 lbs. (150 kg)



a few of the Expeditions that rely on Hy-Gain...

ST. PETER & ST. PAUL ROCKS ZONE 11 SOUTH AMERICA

PYØZS

TO STATION: **TELEX hy gain** 1982

CONFIRMING QSO: DATE MONTH YEAR GMT MHZ 2-WAY RST

DX-PEDITION Operators: PYØSP - Phillip, PY2CPU, PYØSJ - Jacinto, PY2BZD, PYØZSA - Stu, WA2MOE, PYØZSB - Chuck, N4BQW, PYØZSC - Al, K8CW

QSL cards provided by NSCA

MACAU ZONE 24 ASI

CR9

Greetings from **INTERNATIONAL DX FOUNDATION**

DX-PEDITION Operator: BILL HATCHER, KP4KE

QSO WITH: **TELEX hy gain** 1982

EQUIPMENT BY: **TELEX hy gain**

QSL Manager: SCOTT

TRINIDAD AND TOBAGO ZONE 9 NORTH AMERICA

9Y4JA

Greetings from **INTERNATIONAL DX FOUNDATION**

DX-PEDITION Operator: JOHN ACKLEY, KP2A

QSO WITH: **TELEX hy gain** 1982

EQUIPMENT BY: **TELEX hy gain**

QSL Manager: SCOTT

DOMINICA ZONE 8 - NORTH AMERICA

KP2A/J7T

Greetings from **INTERNATIONAL DX FOUNDATION**

DX-PEDITION Operator: JOHN ACKLEY, KP2A

QSO WITH: **TELEX hy gain** 1982

EQUIPMENT BY: **TELEX hy gain**

QSL Manager: SCOTT

BRUNEI ZONE 28

VS5

Greetings from **INTERNATIONAL DX FOUNDATION**

DX-PEDITION Operator: N200 (VS500), N2CW (VS50M), KP2A (VS50M)

QSO WITH: **TELEX hy gain** 1982

EQUIPMENT BY: **TELEX hy gain**

QSL Manager: SCOTT

ANGUILLA ZONE 8 NORTH AMERICA

VP2EA

Greetings from **INTERNATIONAL DX FOUNDATION**

DX-PEDITION Operator: JOHN ACKLEY, KP2A

QSO WITH: **TELEX hy gain** 1982

EQUIPMENT BY: **TELEX hy gain**

QSL Manager: SCOTT

DESECHEO ZONE 11 NORTH AMERICA

KP2A

Greetings from **INTERNATIONAL DX FOUNDATION**

DX-PEDITION Operator: JOHN ACKLEY, KP2A

QSO WITH: **TELEX hy gain** 1982

EQUIPMENT BY: **TELEX hy gain**

QSL Manager: SCOTT

MALAGASY DEMOCRATIC REPUBLIC ZONE 39

5R8AL

Greetings from **INTERNATIONAL DX FOUNDATION**

DX-PEDITION Operator: N200 (VS500), N2CW (VS50M), KP2A (VS50M)

QSO WITH: **TELEX hy gain** 1982

EQUIPMENT BY: **TELEX hy gain**

QSL Manager: SCOTT

ST. PETER & ST. PAUL ROCKS ZONE 11 SOUTH AMERICA

PYØZSB

Greetings from **INTERNATIONAL DX FOUNDATION**

DX-PEDITION Operator: JOHN ACKLEY, KP2A

QSO WITH: **TELEX hy gain** 1982

EQUIPMENT BY: **TELEX hy gain**

QSL Manager: SCOTT

The Virgin Islands of the United States ZONE 8 - NORTH AMERICA

KP2

Greetings from **INTERNATIONAL DX FOUNDATION**

DX-PEDITION Operator: JOHN ACKLEY, KP2A

QSO WITH: **TELEX hy gain** 1982

EQUIPMENT BY: **TELEX hy gain**

QSL Manager: SCOTT

ASCENSION ISLAND ZONE 28

ZD8

Greetings from **INTERNATIONAL DX FOUNDATION**

DX-PEDITION Operator: N200 (VS500), N2CW (VS50M), KP2A (VS50M)

QSO WITH: **TELEX hy gain** 1982

EQUIPMENT BY: **TELEX hy gain**

QSL Manager: SCOTT

EAST MALAYSIA ZONE 28 OCEANIA

9M6MU

Greetings from **INTERNATIONAL DX FOUNDATION**

DX-PEDITION Operator: N200 (VS500), N2CW (VS50M), KP2A (VS50M)

QSO WITH: **TELEX hy gain** 1982

EQUIPMENT BY: **TELEX hy gain**

QSL Manager: SCOTT

TELEX[®]**hy-gain**

a few of the Hams that rely on Hy-Gain...

"DX-ers dream come true..." "It was as though the world opened up." **KX6DS** — using a TH7DX
Kwajalein Atoll

"Great antenna..." **A71AD** — using a TH7DX
Qatar

"I have the best signal from the Islands... Beats the competition..." **S79WHW** — using a TH7DX
Seychelles, Indian Ocean

"Appreciation for the quality of Hy-Gain antennas... Cape Town experienced the highest ever recorded gale force winds." **ZS1ZQ**
South Africa

"Fine products... engineering and quality control I have found to be nothing short of excellent..." **KQ3U**
U.S.A.

"First antennas on the air in Peoples Republic of China" **VE7BC** — using a TH7DX at BY1PK
Canada

"...complete satisfaction... The materials used in construction of this antenna are first rate." "I would not hesitate to recommend it to anyone."
VE4AHP — using a 18AVT
Canada

"I was first Polish station to reach DXCC Honor Roll... obtained by using the 14AVQ...on 14 MHz I worked 93 DXCC countries in 40 hours of operation."
SP7HT — using a 14AVQ
Poland

"Three thousand contacts in a few months... and growing." **5R8AL** — using an Explorer 14
Madagascar

TELEX

hy-gain

TELEX COMMUNICATIONS, INC.

9600 Alcoron Avenue South

Minneapolis, Minnesota 55425 U.S.A. (612) 29-7061

Telephones:

Customer Service 800-328-0771

In Minnesota 612-887-6528

Antenna and Holofer

Parts Orders 409-487-5321

Distributed By

BARRY ELECTRONICS CORP.

512 Broadway

New York, N. Y. 10012

Circle 5-7000-area code: 212

INSTRUCTION MANUAL

ORDER NO. 155

Center Insulator "CI"

PN 800171

Description

The "CI" is a weatherproof, lightweight, high strength center insulator. It is used for connecting coaxial feedline to a doublet-type antenna. The "CI" will accept RG-8/U, RG-11/U, RG-58/U, and RG-59/U. The insulator can be hung from a supporting mast.

Coax Assembly Instructions

If you are using RG-8/U or RG-11/U, strip the end of the coax as shown in Figure 1B. If you are using a smaller coax (RG-58/U, RG-59/U), insert the reducing bushing over the coax before stripping back as shown in Figure 1A.

Solder a 1/4" solder lug on the coax as shown in the Figures 1A and 1B.

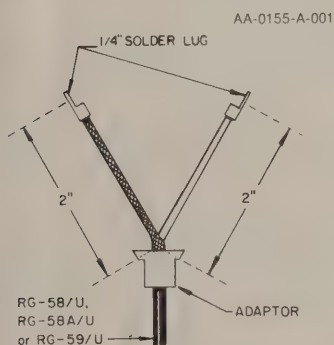


Figure 1A

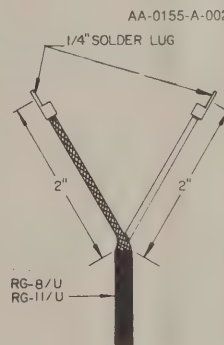


Figure 1B

Attach the coax and dipole wires to the eyebolts exactly as shown in Figure 2. The dipole is put through the eyebolt twice and wrapped around itself at least five times. The free end is soldered to the solder lug for electrical connection.

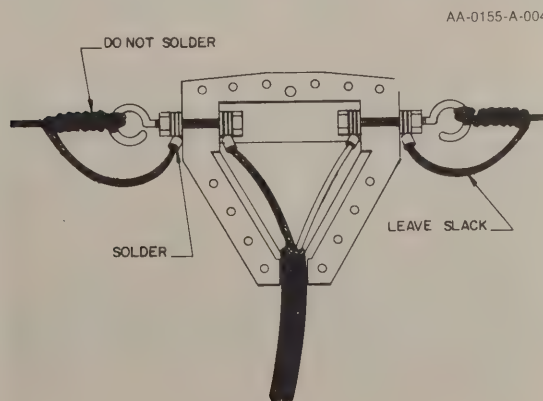


Figure 2

NOTE

IN FIGURE 2 ALL HARDWARE USED TO ASSEMBLE CENTER CONDUCTOR HAS BEEN OMITTED FOR CLARITY

AA-0155-C-003

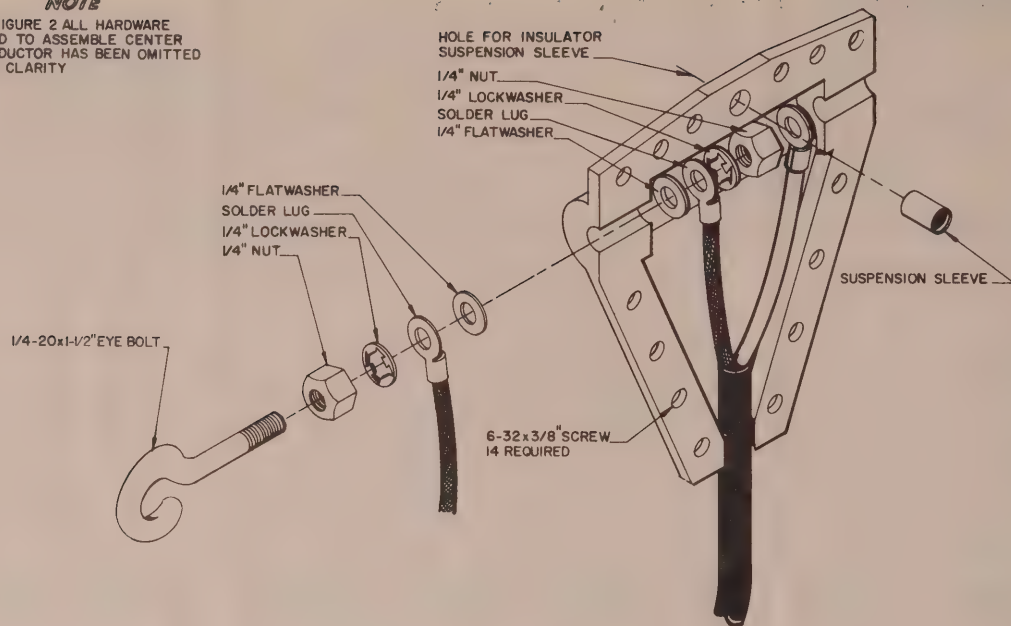


Figure 3

Attach the pigtails of the coax to each eyebolt as shown in the exploded view Figure 3.

Lay the coax connectors, eyebolts, and the dipole wires in one half of the insulator exactly as shown in Figure 2.

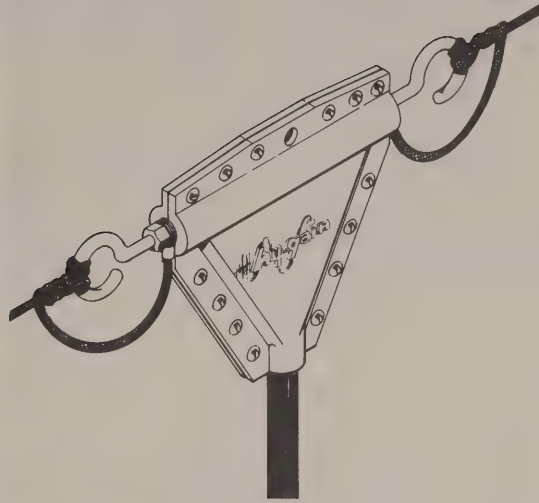
Apply silicone grease, Vaseline, or some similar substance to seal the coax and edges against weather.

Assemble the upper half of the insulator to the lower half and secure using fourteen #6-32 machine screws and nuts. The outer 1/4"-20 nut on each eye bolt is then tightened to insure a good connection. *Do not twist the eye bolt!* This will disturb the internal connections and damage the antenna.

**Mounting
Instructions**

As with any dipole, it is important that this antenna be mounted in the clear. The higher the better, as a general rule. In this respect, a little additional transmission line, with accompanying transmission losses is preferred over the close proximity of surrounding objects.

The light weight of the Model "CI" center insulator allows it to be supported either by the antenna itself, or suspended from a support. A hole is provided in the top of the insulator for suspension from the center. When supporting the antenna by the center insulator, do not let the insulator contact any of the support structure.



CAUTION

When supporting the antenna by the ends only, do not try to take all sag out of the antenna. This will cause tremendous stress to be built up and cause failure of the antenna. Several feet of sag in the center will do no harm, either electrically or mechanically.

Parts List

Part No.	Description	Qty
878970	Parts Pack	1
171586	sleeve, 5/16" x 3/8"	1
465460	insulator, 1/8" x 4" triangle	2
465570	insulator, adaptor plug	1
506680	screw, #6-32 x 3/8"	14
556960	nut, 1/4"-20	4
557000	nut, #6-32	14
567110	lockwasher, 1/4"	4
561334	1/4" flat washer	4
547260	eye bolt, 1/4" x 1 1/2" x 1/2"	2
677555	solder lug, 1/4"	4

90-DAY LIMITED WARRANTY

Hy-Gain Electronics Corporation warrants each new product manufactured to be free from defects in material and workmanship and agrees to remedy any such defect or to furnish a new part in exchange for any part of any unit which under normal installation, use, and service, discloses such defect within the ninety-day term of this warranty, dated from the date of purchase by the original owner. This warranty applies only to the original purchaser.

This warranty does not extend to any of our products which have been subjected to misuse, neglect, accident, incorrect wiring not our own, improper installation, or to use in violation of instructions furnished by us. Nor does it extend to units which have been repaired or altered outside of our factory, nor to accessories used therewith not of our own manufacture.

Upon receipt of equipment, the purchaser is responsible for checking the contents for damage. Any shipping damage should be referred to the carrier.

Hy-Gain Electronics Corporation reserves the right to make any changes deemed necessary or desirable without advance notice or incurring any obligation to make like changes in units previously manufactured or sold.

This warranty does not cover transportation costs that may be incurred. Hy-Gain Electronics Corporation's sole liability is the remedy of any defect for the ninety-day period of this warranty. Hy-Gain Electronics Corporation is not responsible for

personal injury or property damage resulting from improper or careless installation, or usage not intended by the manufacturer.

No person is authorized to assume for us any other liability in connection with the sale of our products.

All warranties are void and terminated one year after the last unit of its type and design has been manufactured by us.

All claims of defect or shortage should be addressed to:

Hy Gain Warranty Service
Hy-Gain Electronics Corporation
4900 Superior Ave.
Lincoln, Nebraska 68504

You must furnish model number, date, place, and proof of purchase, such as a copy of the sales receipt to establish warranty. Your letter should include all pertinent details along with part or item numbers involved. Do not return anything until requested to do so. No warranty card is furnished; you must supply the above information.

Any returned items must have prior authorization. Unexpected returns are greatly delayed in handling. These delays can be avoided by writing in advance and furnishing the necessary information.



TELEX COMMUNICATIONS, INC.

9600 ALDRICH AVE. SO., MINNEAPOLIS, MN 55420 U.S.A.

INSTRUCTION MANUAL

ORDER NO. 270

Two-meter, 8', vertical
Fiberglass Antenna

PN 801199

AO-0270-A-001

This antenna is designed for mobile, marine, fixed station, or repeater operation. It is factory-tuned and needs no adjustment. The 2:1 VSWR bandpass is from 144 to 150 MHz. It is optimized for two-meter FM operation, with less than 1.5:1 VSWR from 146 to 148 MHz. The antenna operates independently of the car body ground, minimizing pattern distortion.

The all-fiberglass design prevents whip flex fade or loss of performance due to corrosion of the antenna or feedpoint. Fiberglass insulation and a DC ground prevent the build-up of a static potential charge. Checked across the input coax, it will read a DC short. *This is normal!*

The base fitting has a male $\frac{3}{8}$ "-24 x $\frac{1}{2}$ " stud that fits all standard bumper and body mounts. For mobile operation, use either a Hy-Gain Model 415 bumper mount or Model 499 body mount, and a Model 417 spring. For fixed station operation, use the Model 271 mast bracket.

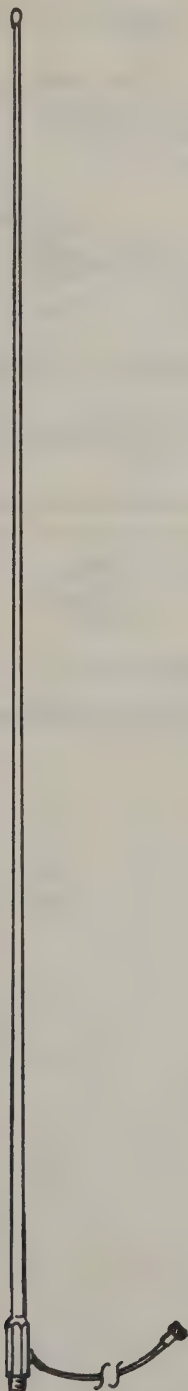
After installation, the coaxial cable may be cut or lengthened as needed. A cable splice near the antenna makes removal of the antenna easier.

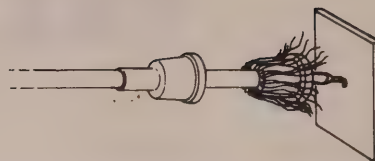
Specifications

Power gain	6 dBi, 3.9 dBd
Maximum power input	250 watts
VSWR bandpass	144 to 150 MHz
Input impedance	50-ohms nominal
Height	8' nominal (2.43 m)
Material	high-strength white fiberglass
Feedline	RG-58/u coax
Connector	AMP connector
Base fitting	$\frac{3}{8}$ "-24 x $\frac{1}{2}$ " stud

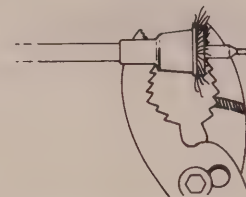
PARTS LIST

Part No.	Description
470283	fiberglass mast
650062	RF field installed connector



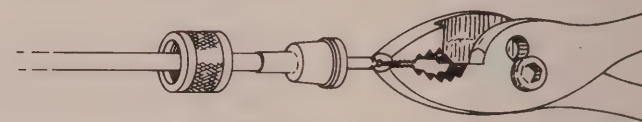


5. Butt the end of the contact against a firm surface and push the shell over the braid.



6. Use pliers to press the contact assembly into the shell as shown. Apply pressure around the circumference of the assembly. The flange of the center conductor should butt against the shell.

7. Trim off any excess braid.



8. Squeeze the end of the contact firmly to crimp the center conductor.

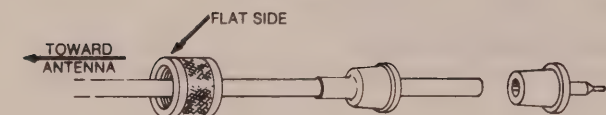


9. Cut off any excess center conductor that extends beyond the end of the contact.

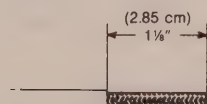


10. Tighten the collar firmly to the mating jack.

NOTE — Check periodically to be sure the collar is tightened on the jack.

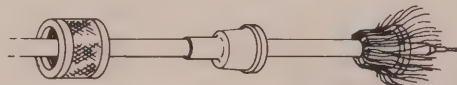
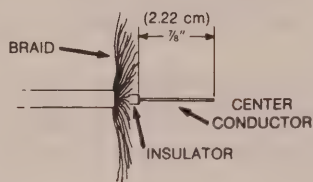


1. Slip the collar and shell over the cable. Be sure the flat edged side of the collar is toward the antenna.



2. Remove the outer jacket of the cable. **NOTE:** Do not nick or cut the strands of the coax braid.

3. Flair the braid and remove the white plastic sleeve beneath it to within 1/8" of the flaired braid. Do not nick the center conductor.



4. Insert the center conductor of the coax cable into the contact assembly. Bend the protruding end of the conductor over the end of the contact. Mold the braid uniformly over the contact assembly.

INSTRUCTION MANUAL

ORDER NO. 385

14AVQ/WB, 10 thru 40 meters,
trap, vertical antenna

PN 805722

General Description The Hy-Gain 14 AVQ/WB is an omnidirectional, self-supporting, vertical radiator that operates in the 10- through 40-meter amateur bands. The system will work against earth ground or a resonant radial system when mounted above ground. You can make your own radial system following the manual, or you can use the Hy-Gain 14RMQ radial system kit.

Performance of the antenna can be optimized for either phone or CW with either a ground or roof mount. Additionally, it can be tuned to mid-band for use with both phone and CW. Regardless of the optimization, the SWR bandwidths of the antenna are sufficiently broad that the antenna will operate at a SWR of 2:1 or less from 10 to 40 meters.

Theory of Operation Automatic band selection is accomplished through the use of heavy-duty "Hy-Q Traps". The Hy-Q Traps are parallel resonant circuits which isolate the various sections of the antenna. This provides true, quarter wavelength resonance on all bands. The top hat enhances the broadband characteristics of the antenna and permits the antenna to be shortened by top loading it.

FOR OUR OVERSEAS CUSTOMERS: The United States uses English units of measurement. Please see the last page of this manual for assistance in identifying the hardware and components supplied with this product.

**Mechanical
Specifications**

Overall height 19' 8-3/4" max. (601.3 cm)
Mast accepts 1-5/8" (4.1 cm)
Wind survival 80 mph (129 kmph)

**Electrical
Specifications**

Frequency coverage 40-, 20-, 15-, and 10-meter amateur bands
Input impedance 52 ohms
SWR at resonance less than 2:1
Power capabilities 1 kw, AM
Lightning protection DC ground
Input connector SO-239

NOTE: If the terminals of the input connector are checked with an ohmmeter, they will show a direct short. **This is normal!** The matching coil in the antenna base puts the entire system at DC ground, but presents a perfect 52-ohm impedance to rf energy.

Choosing a Site

A good ground is an absolute imperative for any vertical antenna system.

The 14AVQ/WB can be mounted on the ground, on a rooftop, or on a mast. When mounting the antenna above ground, remember that you must also install a ground plane radial system. When the antenna is ground-mounted, a radial system is usually not needed. But in some areas, where soil surface conductivity is poor and a good ground cannot be made using the method shown in Figure 2, you will need to lay out ground radials to improve the efficiency of your antenna.

If you mount your antenna on a roof and find the roof space is too small for a radial system, you can droop the radials over the edge of the roof at almost any angle without seriously changing the performance of the antenna. However, the radial system must be insulated from the roof and connected to a good ground for lightning protection.

Assembly and Installation

Be sure to read all of the preceeding information before assembly. Also, acquaint yourself with the drawings in this manual by checking the parts as you take them from the carton.

Decide where you will mount your antenna (rooftop or ground) and what mode of transmission you will use (phone, CW or mid-band). Take special notice of the dimensions on Figure 1. The antenna parts must be set to the exact dimensions given, or it will not operate at peak efficiency. The SWR charts will help you decide which dimensions to choose. (see Fig. 7)

CAUTION

All the antenna dimensions must be set on the mode chosen -- all CW, all mid-band, or all phone. Mixing dimensions in an attempt to improve another mode on certain bands will only deteriorate performance on all bands.

NOTE: The compression clamps supplied with this antenna are used on a variety of products. The screw head of the clamp may or may not contact the lockwasher or clamp body depending on your application. Once it is tight, DO NOT force the screw by tightening it further. To do so may damage both the clamp and tubes.

Refer to Figure 1 in assembling the main portion of the antenna.

M1 Section Assembly

- () Drop the 1-1/4" compression clamp, untightened, over the M1 section (the base is attached to it already). Slip the M2 section (1-1/8" x 44", 111.8 cm long) into the top of M1 and set M2 at dimension "A", as shown. Slide the clamp into place around the top of M1 and tighten it just enough to keep M2 from slipping. It will be fully tightened later.

M2 Section Assembly

- () Drop the 1-1/8" compression clamp, untightened, over the M2 section. Slip the M3 section (1" x 9-1/2", 24.1 cm long) into the top of M2 and set M3 at dimension "B", as shown. Slide the clamp into place around the top of M2 and tighten it just enough to keep M3 from slipping. It will be fully tightened later.

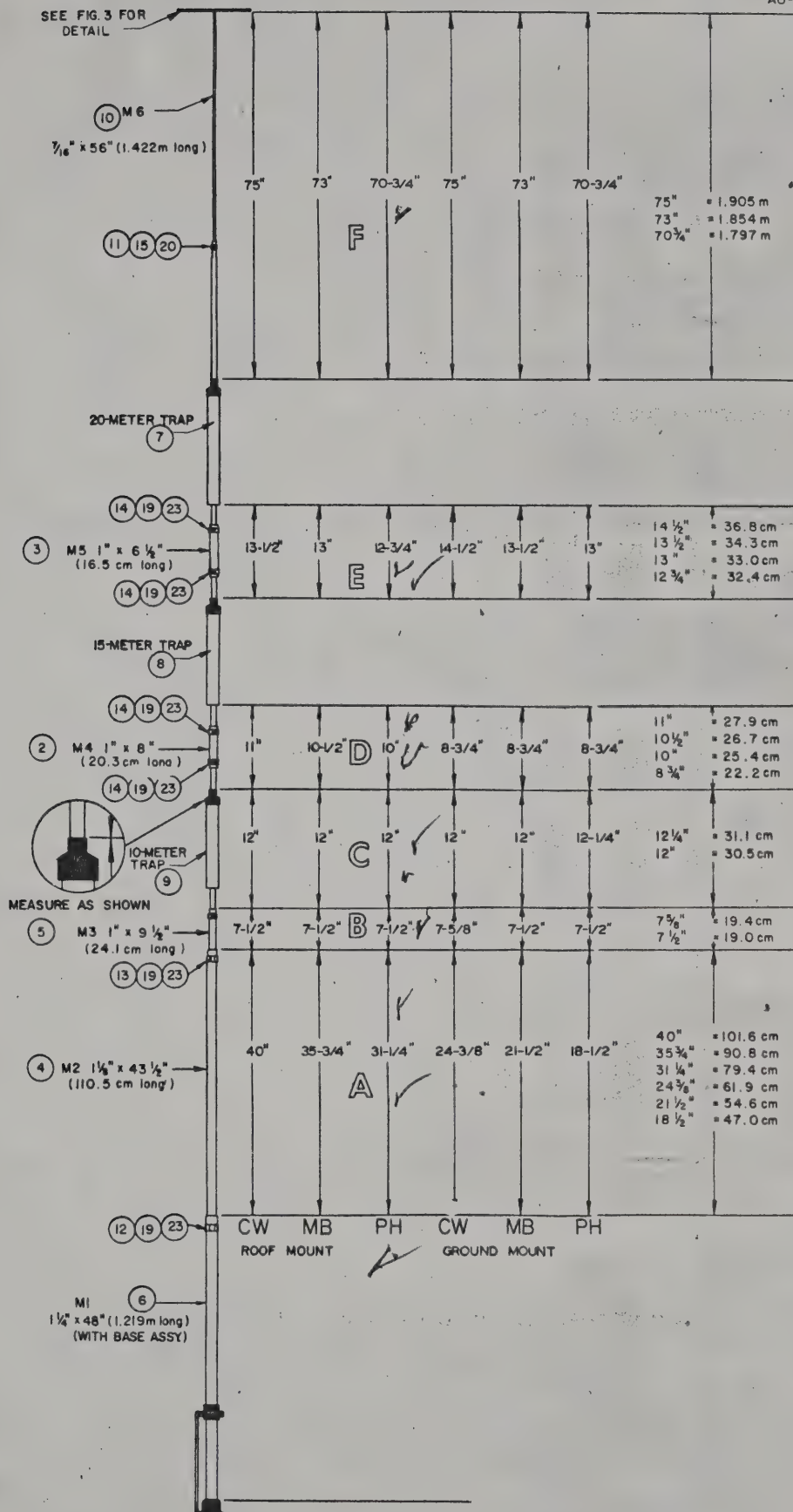


Figure 1

10-meter Trap Assembly

- () Drop an untightened, 1" compression clamp over M3. Then slip the 10-meter trap bottom first into M3. (There is a plastic cover on the top of all three traps.) Set the trap at dimension "C", as shown. Slide the clamp into place around the top of M3 and tighten it just enough to keep the trap from slipping. It will be fully tightened later.

15-meter Trap and M4 Section Assembly

- () Place two, untightened, 1" compression clamps over the M4 section (1" x 8", 20.3 cm long). Slide the M4 section part way over the upper end of the 10-meter trap. Then slide the lower end of the 15-meter trap into the M4 section. Set dimension "D" as shown and locate M4 so that it is equally spaced between the two traps. Tighten the clamps around the ends of M4 just enough to keep things from slipping. They will be fully tightened later.

20-meter Trap and M5 Section Assembly

- () Assemble these two parts just like you did M4 and the 15-meter trap. Use two more 1" compression clamps, the M5 section (1" x 6-1/2", 16.5 cm long), and the 20-meter trap.

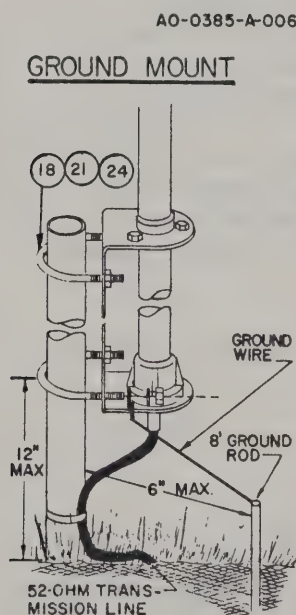


Figure 2

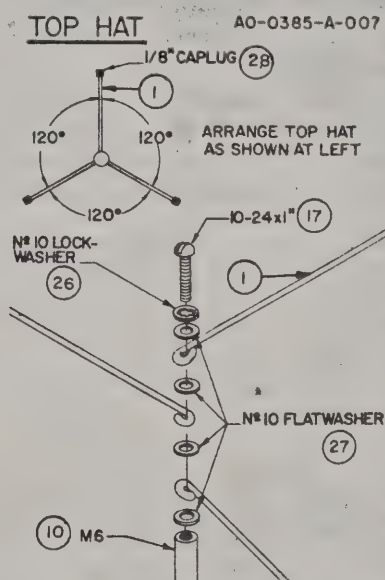


Figure 3

M6 Section Assembly

- () Drop the 11/16" compression clamp, untightened, over the swaged end of the 20-meter trap. Slip the M6 section (7/16" x 56", 142.2 cm long) into the swaged end of the trap and set dimension "D", as shown. Slide the clamp in place around the top of the swaged end of the trap tube and tighten it just enough to keep M6 from slipping. It will be fully tightened later.

Top Hat Assembly

Refer to Figure 3, Top Hat, in assembling the top hat.

- () Push a 1/8" caplug on the end of each top radial.

() Use these pieces of hardware:

one #10-24 x 1" screw
four #10 flatwashers
one #10 lockwasher

to attach the three radial wires, as shown, on M6. Tighten securely.

Recheck and Final Tightening

Recheck all dimensions. Then tighten all the clamps securely in place.

Installing the Antenna

Refer to the two mounting details of Figure 2 and Figure 6 in installing the completed antenna.

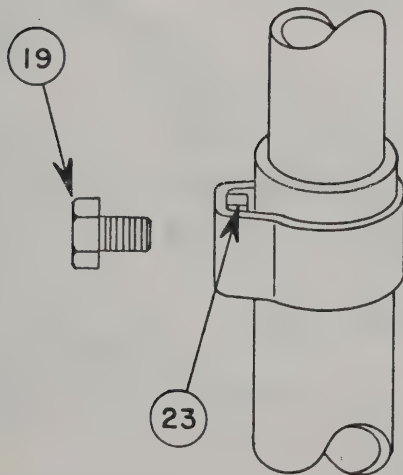
() First mount the completed antenna on your mast (not supplied) as shown in Figure 2. Use the two U-bolts and 5/16" nuts and lockwashers.

() Use three 1/4"-20 x 3/4" bolts, nuts, and lockwashers to attach the insulator to the upper end of the mounting bracket.

() If you are roof-mounting your antenna, use four sets of 1/4"-20 hardware for the preceding step. Then before tightening them, attach two adjacent radials to each set of hardware as shown in the two figures. If desired, you may use the four, 33 ft. (10.058 m) radial system shown.

NOTE: If your antenna is mounted more than 2' (60 cm) above ground, a radial system must be added for proper operation. Also, note that the radial system can serve to guy the system if insulators are used at the proper lengths as shown.

AO-0385-A-004



COMPRESSION CLAMP DETAIL

Figure 4

AO-0385-B-002

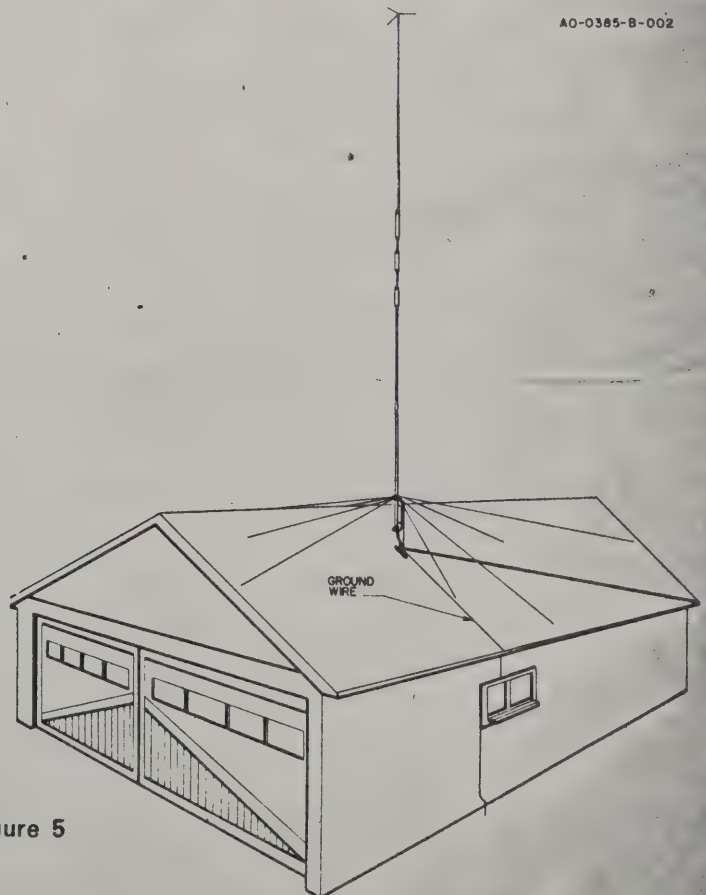


Figure 5

COMPLETED INSTALLATION OF 14AVQ/WB

- () This system MUST be grounded for lightning protection. Connect a ground wire to one U-bolt on the antenna base and run it to a buried, 8 ft. (250 cm) ground rod by the shortest route.
- () If you are ground-mounting your antenna, install it as shown in Figure 2 . You must install an 8 ft. (250 cm) ground rod as shown.

ROOF MOUNT

AO-0385-C-001

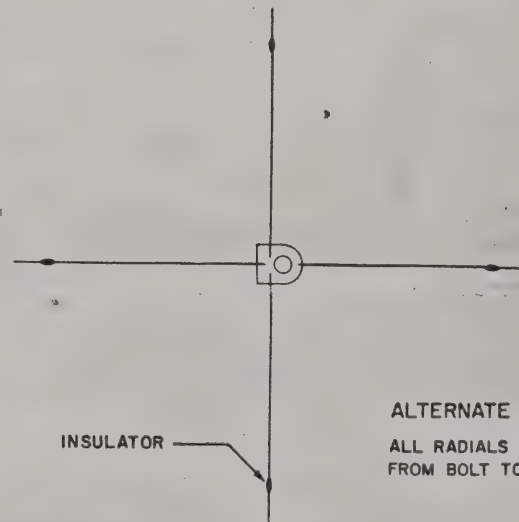
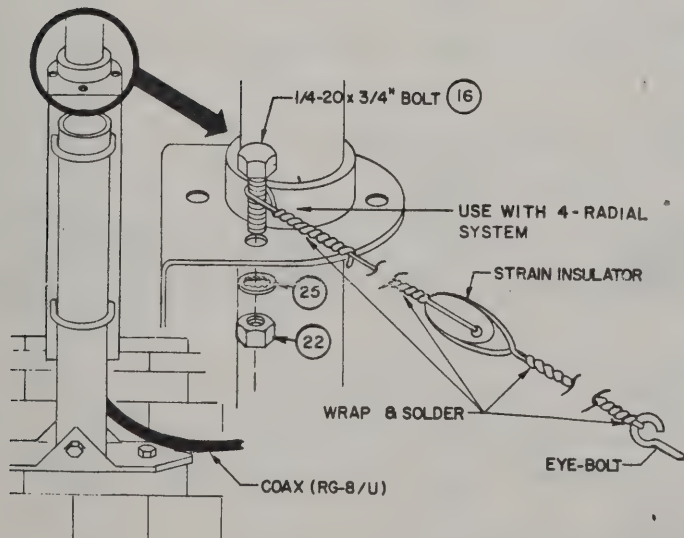
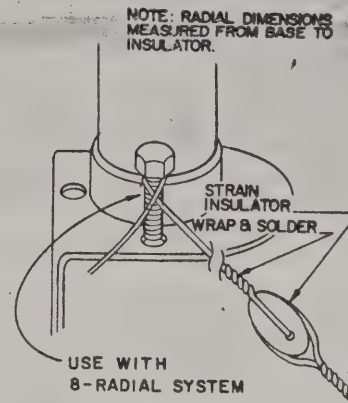
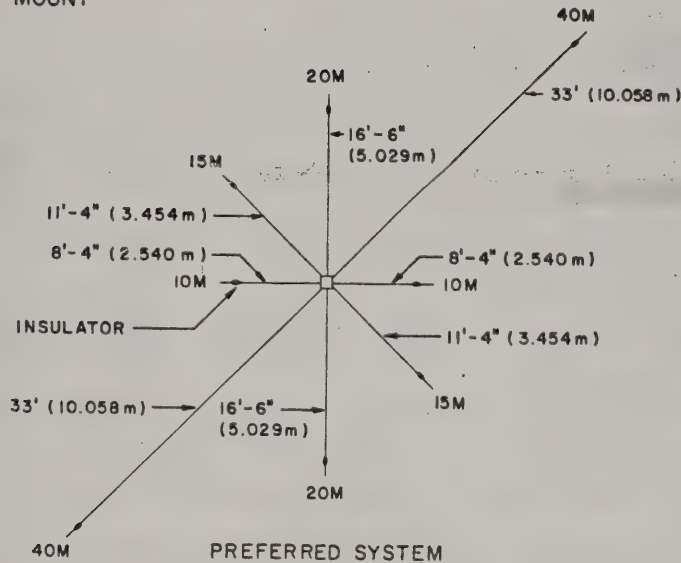


Figure 6

Hooking Up the Antenna

- () Connect your coax (RG-8/U) to the SO-239 connector at the bottom of the mounting bracket.
- () Weather-seal the coax connection with Pli-O-Bond, neoprene, krylon or equivalent to prevent moisture from shorting out the connection. Further, in coastal areas or smog, cover the hardware with live rubber such as DOW-CORNING Silastic Rubber, or GE Silicone Seal.
- () For maximum lightning protection, we recommend the use of a Hy-Gain LA-1 lightning arrestor, available from your Hy-Gain dealer.

Your antenna is now ready to use.

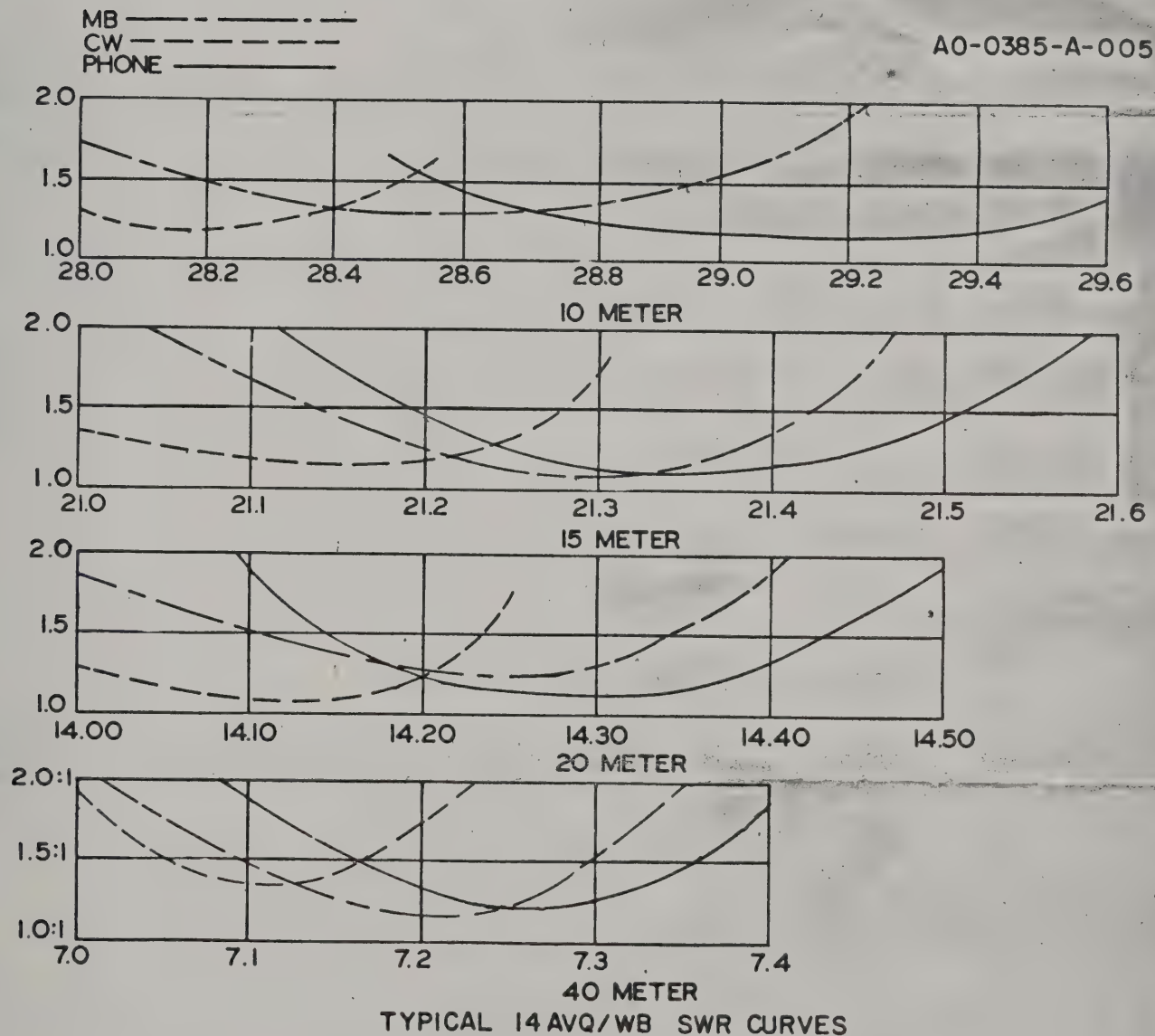


Figure 7

Parts List

Item No.	Part No.	Description	Qty
1	173499	radial, top hat	3
2	190603	M4, 1" x 8" (20.3 cm long)	1
3	190605	M5, 1" x 6-1/2" (16.5 cm long)	1
4	174984	M2, 1-1/8" x 43-1/2" (110.5 cm long)	1
5	190700	M3, 1" x 9-1/2" (24.1 cm long)	1
6	871049	M1, with base assembly	1
7	877129	trap, 20-meter	1
8	877131	trap, 15-meter	1
9	877132	trap, 10-meter	1
10	877157	M6, 7/16" x 56" (142.2 cm long)	1
	877158	with insert	1
11	165763	parts pack	1
12	168680	clamp, compression, 11/16"	1
13	168681	clamp, compression, 1-1/4"	1
14	168682	clamp, compression, 1-1/8"	1
15	506485	clamp, compression, 1"	5
16	506325	screw, 10-24 x 1/2" round head	1
17	506455	screw, 1/4"-20 x 3/4" hex head	4
18	543792	screw, 10-24 x 1" round head	1
19	505540	U-bolt, 5/16"-18	2
20	555362	screw, 1/4"-20 x 3/8" hex head	7
21	556945	nut, 10-24 square	1
22	556960	nut, 5/16"-18 hex jam	4
23	558685	nut, 1/4"-20 hex	4
24	567075	nut, 1/4"-20 square	7
25	567110	lockwasher, 5/16" internal	4
26	567125	lockwasher, 1/4" internal	4
27	567130	lockwasher, #10 internal	1
28	455624	flat washer, #10	4
		caplug, 1/8"	3

Converting English Measurements to Metric

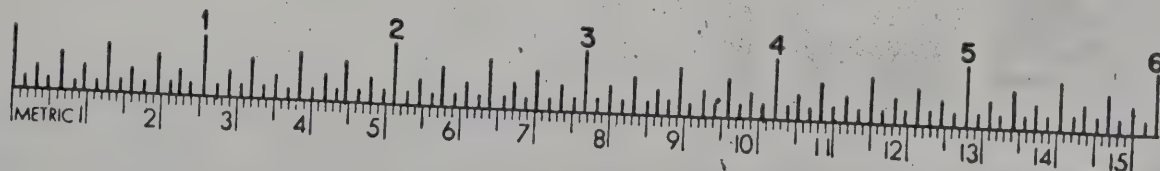
Use this scale to identify lengths of bolts, diameters of tubes, etc.
The English inch (") and foot (') can be converted to centimeters in this way.

$$1 \text{ inch (1'')} = 2.54 \text{ cm}$$

$$1 \text{ foot (1')} = 30.48 \text{ cm}$$

Example:

$$42'' \times 2.54 = 106.7 \text{ cm}$$



11

11

11

11

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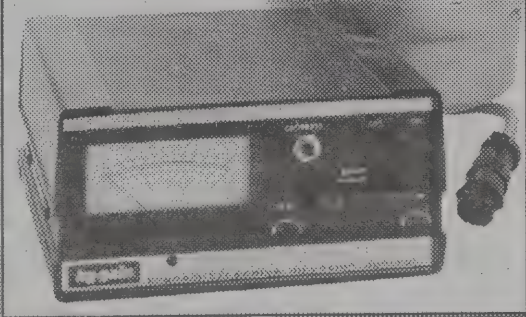
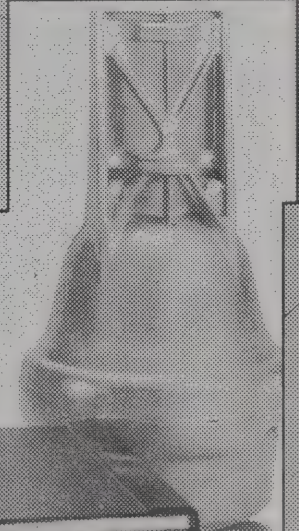
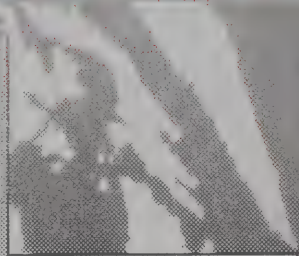
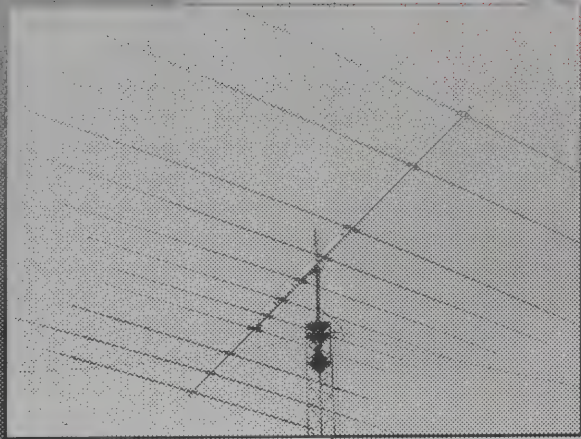
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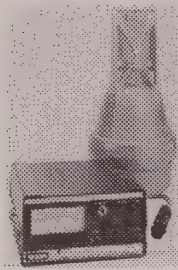


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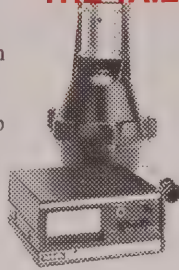
THE HAM-IV
HAM-IV is the
\$529⁹⁵ most popular rotator in the world!
UPS Shippable

It is designed for medium communications arrays of up to 15 square feet wind load area. New low temperature grease permits normal operation down to -30 degrees F.

New alloy ring gear gives extra strength up to 100,000 PSI for maximum readability. New indicator potentiometer, new ferrite beads reduce RF susceptibility, new cinch plug connector plus 8-pin plug at control box. Dual 98 ball bearing race for load bearing strength and electric locking steel wedge brake prevents wind induced antenna movement. North or South center of rotation scale on meter, low voltage control, maximum mast size of 2 1/16".

HAM IV Rotator Specifications	
WindLoad capacity(inside tower)	15 square feet
Wind Load (w/ mast adapter)	7.5 square feet
Turning Power (in lbs.)	800
Brake Power (in lbs.)	5000
Brake Construction	Electric Wedge
Bearing Assembly	Dual race/96 ball bearings
Mounting Hardware	Clamp plate/steel U-bolts
Control Cable Conductors	8
Shipping Weight (lbs.)	24
Effective Moment (in tower)	2800 ft/lbs.

THE TAILTWISTER SERIES II



T-2X is designed
\$619⁹⁵ for medium communications antenna arrays of up to 20 square feet wind load area.
UPS Shippable

T-2XD
\$979⁹⁵ Available with DCU-1 Pathfinder digital control box (T2XD) or standard analog control box

(T2X). Low temperature grease, alloy ring gear, indicator potentiometer, ferrite beads on potentiometer wires, new weatherproof AMP connectors plus 8-pin plug at control box, triple bearing race with 138 ball bearings for large load bearing strength, electric locking steel wedge brake, north or south center of rotation scale on meter, low voltage control, max mast of 2 1/16".

TAILTWISTER Rotator Specifications	
WindLoad capacity(inside tower)	20 square feet
Wind Load (w/ mast adapter)	10 square feet
Turning Power (in lbs.)	1000
Brake Power (in lbs.)	9000
Brake Construction	Electric Wedge
Bearing Assembly	Triple race/138 ball brngs
Mounting Hardware	Clamp plate/steel U-bolts
Control Cable Conductors	8
Shipping Weight (lbs.)	28
Effective Moment (in tower)	3400 ft/lbs.



THE HAM-V
HAM-V is the
\$899⁹⁵ rotator for the millennium.
UPS Shippable new

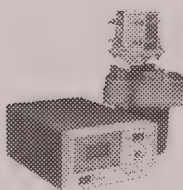
It is designed for medium communications antenna arrays of up to 15 square feet wind load area.

Includes the innovative DCU-1 Pathfinder control unit. A new alloy ring gear with 100,000 PSI tensile strength and new indicator potentiometer have been added for improved reliability.

No more terminal strips! New Cinch connector plus 8-pin plug at control box - no screwdriver required.

New powder coated finish. Maximum mast size of 2 1/16 inches.

HAM V Rotator Specifications	
WindLoad capacity(inside tower)	15 square feet
Wind Load (w/ mast adapter)	7.5 square feet
Turning Power (in lbs.)	800
Brake Power (in lbs.)	5000
Brake Construction	Electric Wedge
Bearing Assembly	Dual race/96 ball bearings
Mounting Hardware	Clamp plate/steel U-bolts
Control Cable Conductors	8
Shipping Weight (lbs.)	24
Effective Moment (in tower)	2800 foot/lbs.



THE HDR-300A
HDR-300A is
\$1229⁹⁵ for King-sized
UPS Shippable

antenna arrays up to 25 sq.ft. wind load area.

Control cable connector, new hardened stainless steel output shaft, new North or South centered calibration, new ferrite beads on potentiometer wires to reduce RF susceptibility, new longer output shaft keyway for added reliability. Heavy-duty self-centering steel mast clamp and hardware. Digital display accurate to 1 degree. Machined steel output.

HDR-300A Rotator Specifications	
WindLoad capacity(inside tower)	25 square feet
Wind Load (w/ mast adapter)	-- square feet
Turning Power (in lbs.)	5000
Brake Power (in lbs.)	7500
Brake Construction	Solenoid operated locking
Bearing Assembly	bronze sleeve w/rollers
Mounting Hardware	stainless steel bolts
Control Cable Conductors	7
Shipping Weight (lbs.)	55
Effective Moment (in tower)	5000 ft/lbs.



THE AR-40
AR-40 is for large
\$269⁹⁵ FM-TV and compact communication
UPS Shippable

antenna arrays up to 3.0 square feet wind load area. Dual 12 ball bearing race is exclusive in its class. Automatic position sensor never needs resetting.

Fully automatic control - just dial and touch for any desired location. Solid state, low voltage control, safe and silent operation. Maximum mast size of 2 1/16 inches. Includes MSLED light duty lower mast support.

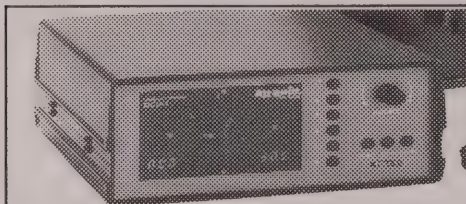
AR-40 Rotator Specifications	
WindLoad capacity(inside tower)	3.0 square feet
Wind Load (w/ mast adapter)	1.5 square feet
Turning Power (in lbs.)	350
Brake Power (in lbs.)	450
Brake Construction	Disc Brake
Bearing Assembly	Dual race/12 ball bearings
Mounting Hardware	Plated clamps/steel bolts
Control Cable Conductors	5
Shipping Weight (lbs.)	14
Effective Moment (in tower)	300 ft/lbs.



CD-45II
\$369⁹⁵ handles 8.5 sq.
UPS Shippable feet mounted inside a tower, or 5 sq. ft.

with mast adapter. Low temperature grease good to -30 F degrees. Bell rotator design gives total weather protection, dual 58 ball bearing race gives proven support. Die-cast ring gear, stamped steel gear drive, heavy duty, trouble free gear train, North center scale, lighted directional indicator, 8-pin plug/socket on control unit, snap-action control switches, low voltage control, safe operation, takes masts to 2 1/16". MSLED light duty lower mast support.

CD-45II Rotator Specifications	
WindLoad capacity(inside tower)	8.5 square feet
Wind Load (w/ mast adapter)	5.0 square feet
Turning Power (in lbs.)	600
Brake Power (in lbs.)	800
Brake Construction	Disc Brake
Bearing Assembly	Dual race/48 ball bearings
Mounting Hardware	plate clamps/steel U-bolts
Control Cable Conductors	8
Shipping Weight (lbs.)	22
Effective Moment (in tower)	1200 ft/lbs.



DCU-1
\$619⁹⁵
UPS Shippable This innovative digital rotator control unit is compatible with T2X, HAM IV and HAM V Rotators. Shipping weight: 8 lbs. Automatic Operation of brake and rotor Computer control with RS232 passthrough

THE DCU-1 PATHFINDER


Compatible with many logging and contest programs
6 presets for your favorite beam headings
1 degree heading accuracy
Automatic 8-second brake delay
360 degree choice for center of rotation

hy-gain. VHF/UHF antennas

VHF VERTICAL ANTENNAS


V-2R 2 Meter vertical with 3 dBd gain derived from the famous extended double zepp antenna design. Radiating elements are two collinear $\frac{1}{4}$ waves fed in phase. 2 sets of $\frac{1}{4}$ wave radials properly decouple lower radiator from the mast. SO-239, handles 500 Watts. 9 ft.

\$99⁹⁵



V-42R V-42R is independently tunable at 144 and 440 MHz. Fed through one coax cable, it has sets of $\frac{1}{4}$ wave radials which properly decouple $\frac{1}{8}$ wave radiators from the mast. Gives 5 dBd gain on UHF and 3 dBd gain on VHF. Type N, handles 200 Watts. 9 ft.

\$159⁹⁵



V-4R 70 cm vertical with 3 dBd gain derived from double zepp antenna design. Type N, handles 500 Watts, 4 foot.

\$99⁹⁵


V-3R 1 1/4 Meter vertical with 3dBd gain derived from double zepp design. SO-239, handles 500 Watts. 6ft. 9 inches.

\$109⁹⁵




V-6R V-6R antenna is based on 2 collinear $\frac{1}{8}$ wave radiators. 500 Watt enclosed coil and 2 sets of $\frac{1}{4}$ wave radials which provide complete mast decoupling and optimum pattern and gain. Rugged design withstands severe weather, also DC ground lightning protector. 25 ft., 3 inches, UHF female conn., handles 500 Watts.

\$189⁹⁵




Model#	Frequency	Gain dBd	Pwr Input	Wind Surv	Max Mast	Height	Weight
V-2R	138-175	3 dBd	500 Watts	105 mph	2 in. OD	9 foot	6 pounds
V-42R	143-153, 436-455	5 dBd UHF 3 dBd VHF	200 Watts Continuous	100 mph	2 in. OD	9 foot	6 pounds
V-4R	400-475	3 dBd	500 Watts	230 mph	2 in. OD	4 foot	4 pounds
V-3R	216-225	3 dBd	500 Watts	100 mph	2 in. OD	6 ft. 9 in.	5 pounds
V-6R	51-54	3 dBd	500 Watts	80 mph	1.5-2.25 in.	25 ft. 3 in.	15 pounds

VHF/UHF DX BEAM ANTENNAS

UB-703DX Hy-Gain's DX-Series VHF/UHF Beams are based on the DL6WU element length and spacing and were further refined on Hy-Gain's antenna test range and by computer modeling. Both beams feature encapsulated weatherproof feedpoints with type N connectors for excellent VSWR and power handling. High quality mechanical construction is assured by heavy wall booms and boom supports made of 6063-T832 aluminum tubing, stainless steel hardware, UV stabilized thick-shoulder element insulators and PTFE coaxial baluns.

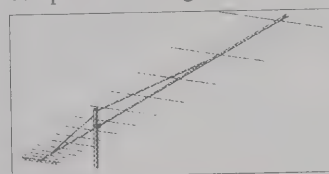
\$209⁹⁵

Covers 420-438 MHz



VB-215DX Covers 144-146 MHz

\$209⁹⁵

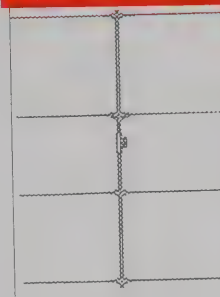
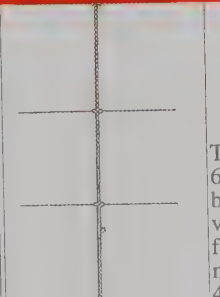


SIX METER DX BEAM ANTENNAS

VB-66DX Covers 50-54 MHz

\$239⁹⁵

The VB-64DX and VB-66DX feature a concept in beam construction that provides actual delivered performance equalling maximum theoretical gain. The 4-element VB-64DX generates an impressive 8.2 dBd gain and the 6-element VB-66DX increases the gain to an unprecedented 10.3 dBd.

VB-64DX Covers 50-54 MHz

\$129⁹⁵

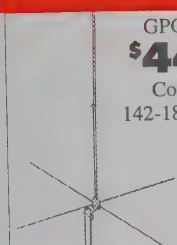
Model#	Frequency	Gain dBd	Pwr Input	Wind Area	#Elements	Boom leng	Weight
UB-7031DX	420-438	17.6 dBd	2 kW PEP	1.9 sq. ft.	31	24.06 ft.	9.25 lbs.
VB-215DX	144.0-146.0	14.2 dBd	2 kW PEP	2.75 sq. ft.	15	27.88 ft.	13.56 lbs.
VB-64DX	50-54	8.2 dBd	500 Watts	1.1 sq. ft.	4	12 ft.	10
VB-66DX	50-54	10.3 dBd	1.5kWPEP	1.8 sq. ft.	6	24.575 ft.	17

VHF GROUND PLANE ANTENNA

GPG-2B The GPG-2B, a 5/8 Wavelength Ground Plane for two meters is omni-directional and tunable from 142-185 MHz. It delivers an omni-directional gain of 1.2 dBd. Handles 100 Watts. Measures 4 feet, max mast mount accepted is 1.625 in O.D. Wind area is .30 sq. ft.

\$44⁹⁵

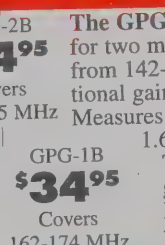
Covers 142-185 MHz



GPG-1B The GPG-1B is a 1/4 Wavelength ground plane similar to the GPG-2B. It has unity gain, 2 feet height and is tunable from 162-174 MHz.

\$34⁹⁵

Covers 162-174 MHz



OSCAR LINK 435 MHz • 145.9 MHz

Hy-Gain's OSCAR antennas are complete with the necessary phasing lines, relays and hardware. It includes left and right circularity switching to reduce fading (less than 3 dB ellipticity). True RF switching elements are rated at 200 Watts and improved VSWR for higher efficiency. Feed points are encapsulated and weather protected for long life. The cross-boom, made of fiberglass, maintains the integrity of the circularity pattern.

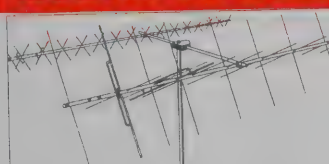
VB-216SAT Covers 144-148 MHz

\$219⁹⁵

UB-7030SAT Covers 432-438 MHz

\$219⁹⁵

DB-218SAT, \$1489.95, complete 2 Meter/440 MHz antenna system.



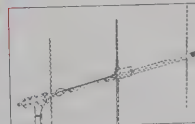
Model#	F/B ratio	Gain dBd	Pwr Input	# Elements	Boom leng	Wind Area	Weight
VB-216SAT	25 dB	11.5 dBd	200 W PEP	16	168.75 in.	1.1 sq. ft.	7 lbs.
VB-7030SAT	25 dB	14 dBd	200 W PEP	30	134 inches	.7 sq. ft.	4 lbs.

VHF FM BEAM ANTENNAS

These 2 Meter FM beam antennas include Hy-Gain's exclusive *Beta Match*™ to provide exceptional Front-to-Back ratio and maximum obtainable gains. The VB-23FM (6.1 dBd gain), VB-25FM (9 dBd gain), VB-28FM (11.8 dBd gain), and the VB-214FM (13 dBd gain) gives you a wide choice of 2 Meter Beam performance from which to choose. Accepts up to 2 inch mast.

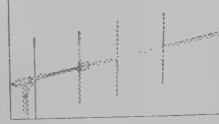
VB-23FM 2 Meter FM Beam Antenna

\$41⁹⁵



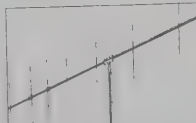
VB-25FM 2 Meter FM Beam Antenna

\$51⁹⁵



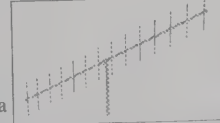
VB-28FM 2 Meter FM Beam Antenna

\$71⁹⁵



VB-214FM 2 Meter FM Beam Antenna

\$81⁹⁵



Model#	F/B(MAX)	Gain dBd	Pwr Input	Longest el	Boom leng	Mast dia.	Weight
VB-23FM	20 dB	6.1 dBd	500 Watts	40.25 in.	43.5 in.	2.0 in O.D.	2 pounds
VB-25FM	20 dB	9 dBd	500 Watts	39.625 in.	75 in.	2.0 in O.D.	3 pounds
VB-28FM	20 dB	11.8 dBd	500 Watts	40.25 in.	148.75 in.	2.0 in O.D.	4 pounds
VB-214FM	20 dB	13 dBd	500 Watts	39.5 in.	15 ft. 6 in.	2.0 in O.D.	6 pounds

hy-gain Discoverer Series

DISCOVERER 71

This rotatable dipole of low weight and wind surface area so easily fits most existing beam installations.

This antenna can be tuned to either 30 or 40 Meters with a front-to-side ratio of 30 dB for a fast, expansion of band capability.

Feeds with 50 Ohm coax. Comes with pre-formed mast clamp.

DISCOVERER 72

This two-element 40 Meter beam has a unique hairpin loading system. It delivers superior performance.

Feeds with 50 Ohm coax and comes factory pre-tuned with Hy-Gain's exclusive *BetaMatch*™.

Tilttable boom-to-mast bracket and stainless steel hardware is included. Hy-Gain high power BN-4000 balun is recommended.

DIRECTOR KIT 73

Converts the Discoverer 72 into a three-element beam. Even more amazing, it's all on a 35 foot boom, outperforming the other brands that are much larger.

The combination Discoverer 72 and Director Kit even fits on medium duty towers such as the HG-52SS, saving both cost and space.

HyGain offers you several options with wide bandwidth and Hy-Q efficiency without coils. The antennas handle legal power limits.

DIS-71
\$269⁹⁵

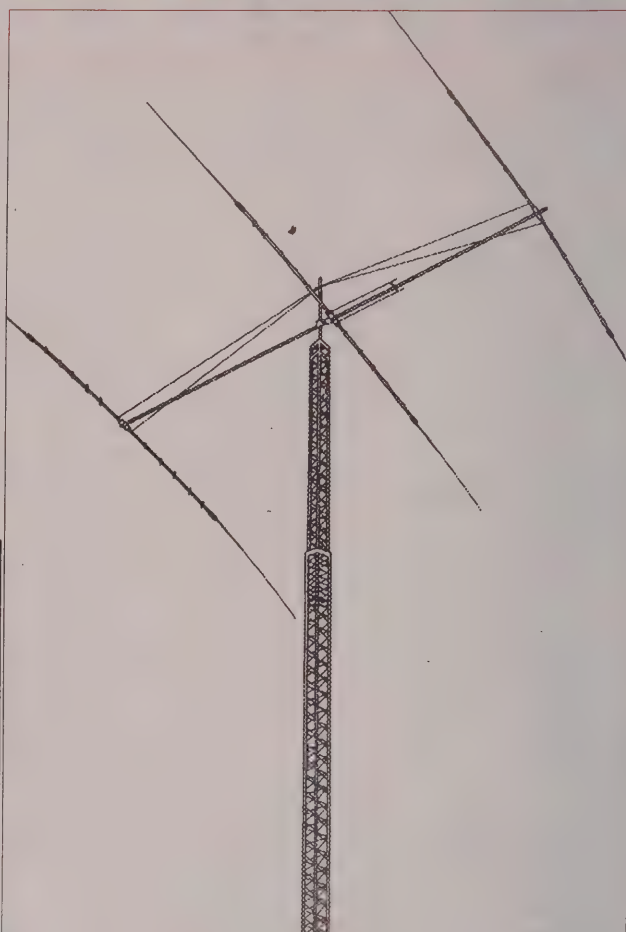
Covers
30/40 Meters

DIS-72
\$609⁹⁵

Covers
30/40 Meters

DIR-73K
\$379⁹⁵

Add-on kit covers
30/40 Meters



Specifications:	Discoverer Series	Discoverer Series	specs w/ Director Kit
Model Number	DIS-71	DIS-72	DIR-73K
Gain (dBd)	4.3 dBd	4.3 dBd	5.3 dBd
Front-to-back ratio	35 dB	15 dB	26 dB
Max Power	1500 Watts PEP	1500 Watts PEP	1500 Watts PEP
Boom Length	2.7 feet	22.6 feet	35 feet
Longest Element	45 feet	44.8 feet	45 feet 7 inches
Turning Radius	22.5 feet	25 feet	28 feet 9 inches
Max Mast Diameter	1.9 in. - 2.5 in. O.D.	1.9 in. - 2.5 in. O.D.	1.9 in. - 2.5 in. O.D.
Surface Area	2.7 square feet	6.0 square feet	9.0 square feet
Net Weight	23 pounds	57 pounds	98 pounds
Max Wind Survival	100 m.p.h.	80 m.p.h.	80 m.p.h.

LONG JOHNS MINIMAL WEIGHT - MAXIMUM STRENGTH



LJ-103BA **\$139⁹⁵** Covers 10 Meters
 LJ-153BA **\$189⁹⁵** Covers 15 Meters
 LJ-203BA **\$299⁹⁵** Covers 20 Meters
 LJ-204BA **\$489⁹⁵** Covers 20/17 Meters

LJ-105CA
\$259⁹⁵

Covers
10 Meters

LJ-155CA
\$389⁹⁵

Covers
15/12 Meters

LJ-205CA
\$669⁹⁵

Covers
20/17 Meters

HF MONOBANDERS

LJ-105CA, 10 Meters, Five Elements, Exclusive 50 Ohm *BetaMatch*™. Excellent DC Ground. Stainless steel hardware and clamps. BN-4000 Balun recommended.

LJ-155CA, 15/12 Meters, Five Elements, Exclusive 50 Ohm *BetaMatch*™. Excellent DC Ground. Stainless steel hardware and clamps. Includes 12 Meter setting. BN-4000 Balun recommended.

LJ-205CA, 20/17 Meters, Five Elements. Exclusive 50 Ohm *BetaMatch*™. Excellent DC Ground. Stainless steel hardware and clamps. BN-4000 Balun recommended. manual has setting for both bands.

LJ-204BA, 20/17 Meters, Four Elements. Exclusive 50 Ohm *BetaMatch*™. The LJ-204BA has a tilttable cast aluminum boom-to-mast clamp, heavy gauge machine-formed element-to-boom brackets and stainless steel hardware and clamps. BN-4000 Balun is recommended. manual has setting for both bands.

LJ-103BA, 10 Meters, Three Elements. Feeds with 50 Ohm coax, comes factory pre-tuned with Hy-Gain's exclusive *BetaMatch*™. BN-86 balun recommended. Includes stainless steel hardware and clamps.

LJ-153BA, 15 Meters, Three Elements. Feeds with 50 Ohm coax, *BetaMatch*™, 5.7 dBd gain. BN-4000 Balun recommended. Stainless steel hardware and clamps.

LJ-203BA, 20 Meters, Three elements on a 16 foot boom. The LJ-203BA feeds with 50 Ohm coax, is factory pre-tuned with Hy-Gain's exclusive *BetaMatch*™. BN-4000 Balun is recommended. Stainless steel hardware and clamps. Tilttable, heavy-duty cast aluminum boom-to-mast bracket.

Model #	Gain (dBd)	F/B Max	Max Power	Boom length	Long elment	Turn Radius	Mast diam.	Surface area	Wind Surviv
LJ-105CA	8.6 dBd	36 dB	1500 W PEP	24 feet	18 feet	15 feet	1.9-2.5 in.OD	3.9 sq. feet	100 m.p.h.
LJ-155CA	7.6 dBd	25 dB	1500 W PEP	26 feet	25 feet	17 feet, 6 in.	1.9-2.5 in.OD	5.2 sq. feet	88 m.p.h.
LJ-205CA	6.5 dBd	30 dB	1500 W PEP	34 feet	36 feet	25 feet	1.9-2.5 in.OD	9.0 sq. feet	99 m.p.h.
LJ-204BA	6.0 dBd	28 dB	1500 W PEP	26 feet	36 feet, 6 in.	22 feet, 6 in.	1.9-2.5 in.OD	7.3 sq. feet	100 m.p.h.
LJ-103BA	5.7 dBd	24 dB	1500 W PEP	8 feet	18 feet, 7 in.	10 feet, 2 in.	1.625-2.0 in.	2 sq. feet	107 m.p.h.
LJ-153BA	5.7 dBd	25 dB	1500 W PEP	12 feet	24 feet, 11 in.	14 feet, 3 in.	1.9-2.5 in.OD	3 sq. feet	80 m.p.h.
LJ-203BA	5.1 dBd	23 dB	1500 W PEP	16 feet, 6 in.	37 feet	20 feet	1.9-2.5 in.OD	5.4 sq. feet	80 m.p.h.

hy-gain. HF BEAM ANTENNAS

World Famous **THUNDERBIRDS** are rugged enough for **DX-Peditions** and also **used in backyards around the world!**

TH-11DX, 11-Element Broadband 5-Band Super Thunderbird Beam for 10, 12, 15, 17, and 20 Meters. The TH-11DX is designed to give the maximum DX performance to the serious amateur. Features a lossless log-periodic driven array on all bands with monoband reflectors. Includes high power BN-4000 balun which contributes to produce a maximum power rating of 2000 Watts continuous duty, 4000 Watts PEP on all modes. The TH-11DX also features a new corrosion resistant wire boom support system, hot dipped galvanized and stainless steel parts. Stainless steel hardware and clamps are used on all electrical connections.

TH-1217, Dual Band beam for 12 and 17 Meters. Incorporates Hy-Gain's superior mechanical design and has been computer optimized and range-tested for maximum performance. TH-1217 features a 14 foot boom in 4 sections, packaged for DX-peditions. It handles full legal power and has Hy-Gain's standard rugged boom-to-mast clamp.

TH-7DX, 7-element, broadband Tri-Band Beam for 10, 15, and 20 Meters. This amazing tri-bander, using a dual driven 7-element system, maintains a VSWR of less than 2:1 across all bands, including ALL of 10 Meters. No compromise on gain performance was needed to achieve this efficiency. A unique combination of trapped and monoband parasitic elements produces a front-to-back ratio of 27 dB. The antenna includes exclusive diecast aluminum, rugged boom-to-mast clamp, and heavy gauge element-to-boom brackets. Comes complete with a BN-86 balun.

EXP-14, Broadband Tri-Bander Beam with 40 or 30 Meter Option. Covers 10/15/20 Meters. EXP-14 has a unique Para-Sleeve concept that optimizes edge-to-edge bandwidth.

TH-11DX
\$1079⁹⁵

Covers 10/12/15,
17/20 Meters

DB-1217
\$409⁹⁵

Covers 12 and 17
Meters

TH-7DX
\$819⁹⁵

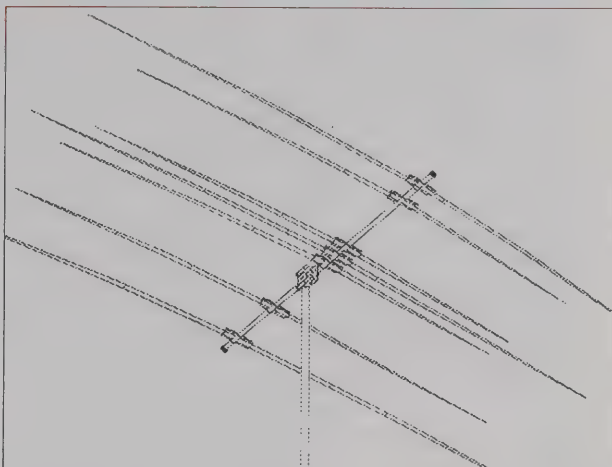
Covers 10, 15 and
20 Meters

EXP-14
\$549⁹⁵

Covers 10, 15 and
20 Meters

TH-5MK2
\$699⁹⁵

Covers 10, 15 and
20 Meters



TH-3MK4
\$439⁹⁵

Covers 10, 15 and
20 Meters

TH-3JRS
\$329⁹⁵

Covers 10, 15 and
20 Meters

TH-2MK3
\$339⁹⁵

Covers 10, 15 and
20 Meters

DB-1217
Dual band
beam for
12 and 17
Meters
shown
above.

Model #	Gain	F/B ratio	Max power	Boom Length	Longest element	Turning Radius	Mast Diameter	Surface Area	Net weight	Wind Survival
TH-11DX	6.2 dBd (avg)	22 dB (avg)	4000 W PEP	24 feet	37 feet	22 feet	1.9-2.5 in. OD	12.5 sq. feet	88 pounds	99 mph
TH-1217	5.4 dBd (avg)	22 dB (avg)	1500 W PEP	14 feet	29 feet 6 inches	16 feet 3 inches	1.5-2.5 in. OD	6.7 sq. feet	40 pounds	115 mph
TH-7DX	6.57 dBd (avg)	21 dB (avg)	1500 W PEP	24 feet	31 feet	20 feet	1.5-2.5 in. OD	9.4 sq. feet	75 pounds	100 mph
EXP-14	5.9 dBd (avg)	25 dB (avg)	1500 W PEP	14 feet	31 feet 6 inches	17 feet 3 inches	1.5-2.5 in. OD	7.5 sq. feet	45 pounds	100 mph
TH-5MK2	6.1 dBd (avg)	20 dB (avg)	1500 W PEP	19 feet	31 feet 6 inches	18 feet 5 inches	1.5-2.5 in. OD	7.4 sq. feet	57 pounds	100 mph
TH-3MK4	5.8 dBd (avg)	25 dB (avg)	1500 W PEP	14 feet	27 feet 5 inches	15 feet 4 inches	1.9-2.5 in. OD	4.6 sq. feet	35 pounds	95 mph
TH-3JRS	5.8 dBd (avg)	25 dB (avg)	600 W PEP	12 feet	27 feet 3 inches	14 feet 9 inches	1.25-2.0 in. OD	3.35 sq. feet	21 pounds	80 mph
TH-2MK3	3.4 dBd (avg)	15-20 dB (avg)	1500 W PEP	6 feet	27.3 feet	14.3 feet	1.9-2.5 in. OD	3.25 sq. feet	20 pounds	80 mph

HF LOG PERIODIC ANTENNAS

LP-1009A

13-30 MHz (10, 12, 15, 17, and 20 Meters)

This log periodic antenna covers the complete 13-30 MHz HF spectrum under a 2:1 VSWR. Built to commercial specifications, it is used by MARS, monitoring stations, marine and government radio stations around the world and now it's available to Hy-Gain amateur customers. The discerning ham operator will appreciate its performance and ease of use. Just imagine all that spectrum coverage and only one feedline. Wind survivability of 103 mph and the exclusive 2KW BN-4000 current type balun are typical of this antenna's capabilities. It can be turned with the T2X Tailtwister or HDR-300A rotators.

LP-1010A

10-30 MHz (10, 12, 15, 17, 20, and 30 Meters)

There are only a few antennas that offer as much HF frequency coverage as the LP-1010A. You get six HF amateur bands. Like the LP-1009A, this antenna is built to commercial standards using stainless steel hardware and having a wind survivability of 93 mph. It can be turned with the T2X Tailtwister or HDR-300A rotators.

LP-1009A/AN

\$1329⁹⁵

Covers 10, 12, 15, 17,
and 20 Meters

LP-1009A for UHF
connector

LP-1009AN for "N"
connector

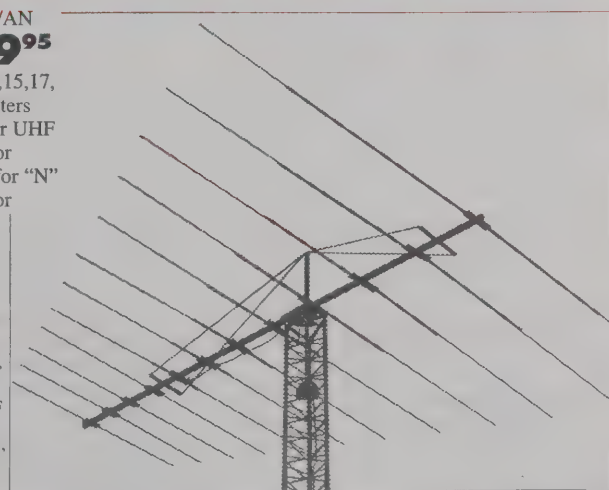
LP-1010A/AN

\$1679⁹⁵

Covers 10, 12, 15, 17,
20 and 30 Meters

LP-1010A for UHF
connector

LP-1010AN for "N"
connector



HF Multiband Hy-Q trap DOUBLETs



DP-2BDQ
\$129⁹⁵

Covers 80
and 40 Meters

DP-5BDQ
\$239⁹⁵

Covers 80
thru 10 Meters

DP-2BDQ, 101 feet maximum length of dipole. DP-5BDQ, 94 feet max length. DP-2BDQ and DP-5BDQ are designed for horizontal or inverted "V" rated at legal power. Individually pretuned

matched traps for each band, 50 Ohm feed, coaxial cable not included.

ADJUSTABLE HF DIPOLE ANTENNA



DP-19PD
\$269⁹⁵

Covers 80
thru 10 Meters

2-30 MHz frequency range, 80-10 Meters. Perfect for field day or anytime you need to put up a dipole in a hurry. It uses braided nylon wire rope. Conductors are woven into the rope. Uncoil the conductor using pre-marked frequencies for easy installation. 100 feet of support rope on each end and a SO-239 (UHF) connector is on center insulator.

hy-gain[®] HF VERTICALS

AV-12AVQ
\$114⁹⁵

AV-12AVQ

Covers 20, 15, and 10 Meters

This completely self-supporting tri-band vertical antenna delivers an exceptionally low angle radiation with 1.5:1 VSWR or less on all three bands. Includes all stainless steel hardware and SO-239 input connector.

AV-18VS
\$74⁹⁵

AV-18VS

*Covers 80 through
10 Meter continuous*

This 18 foot radiator has a loading coil at its base that allows precision antenna resonating. The AV-18VS may be installed on a short 1-5/8 inch diameter mast driven into the ground. It is also ideal for shortwave listening.

AV-14AVQ
\$159⁹⁵

AV-14AVQ

Covers 40 through 10 Meters

This self-supporting, automatic band switching vertical delivers outstanding performance with exceptional L/C ratio and a very low angle radiation pattern. Includes all stainless steel hardware and SO-239 input connector.

AV-18HT
\$739⁹⁵

AV-18HT

Covers 80 through 10 Meters

The AV-18HT features automatic band selection achieved through a unique stub decoupling system which effectively isolates various sections of the antenna so that an electrical 1/4 wavelength (or odd multiple of a 1/4 wavelength) exists on all bands. Approximately 250 kHz bandwidth at 2:1 VSWR on 80 Meters. With the addition of a base loading coil (LC160Q), it also provides exceptional 160 Meter performance. Includes all stainless steel hardware and tilt-over base. Unity gain on 20,40,80; 2 dB on 10/15 M.

AV-14RMQ
\$79⁹⁵

AV-14RMQ

Roof Mounting Kit

The AV-14RMQ roof mounting kit provides rugged support for Hy-Gain models AV-18VS, AV-14AVQ, and AV-12AVQ. Kit includes base plate, mast, radial/guy wires and mounting hardware.

DX-77A

*No Ground Radials Required,
covers 40/30/20/17/15
and 10 Meters*

DX-77A
\$429⁹⁵

Handles legal limit, 29 feet high, innovative tilt base. Has 55% greater bandwidth than competitive verticals. Unity gain (compared to halfwave vertical dipole).

DX-88
\$349⁹⁵

DX-88

*8 Band coverage for
80 through 10 Meters*

The DX-88 offers coverage of all the HF amateur bands. The key design feature that makes the DX-88 this flexible is the adjustable capacitors that eliminate many of the tuning problems with other verticals. Eighty and forty Meters can even be tuned from the ground without having to lower the antenna. The DX-88 handles maximum legal power on all bands, features low-loss traps and has a low angle of radiation for good DX performance. The self-supporting DX-88 comes with stainless steel hardware for long term reliability and will withstand 75 mph winds without damage. Any vertical antenna works better with a ground system and the DX-88 is no exception. Surprisingly good performance using just a ground rod can be expected, but ground and roof radial kits are available for maximum performance. The DX-88 is supplied with a detailed manual and comes with a two year limited warranty.

Optional Accessories for multiband DX-88 HF vertical

GRK-88, \$81.95. Ground Radial System
RRK-88, \$89.95. Roof Radial System
KIT-160-88, \$179.95. 160 Meter Add on Kit. Should be used on ground mount only.

Model #	Bands	Max Power	Connector	Height	Weight	Wind Survival	Rec. Mast size
AV-12AVQ	10/15/20 M	1500 W PEP	SO-239	13 feet	9 pounds	80 mph	1.5-1.625in.OD
AV-18V	80 thru 10 M	1500 W PEP	SO-239	18 feet	4 pounds	80 mph	1.5-1.625in.OD
AV-14AVQ	10/15/20/40M	1500 W PEP	SO-239	18 feet	9 pounds	80 mph	1.5-1.625in.OD
AV-18HT	10,15,20,40,80	1500 W PEP	SO-239	53 feet	114 pounds	75 mph	-----
DX-77	10 thru 40 M	1500 W PEP	SO-239	29 feet	25 pounds	60 mph (no guy)	1.752.125in.OD
DX-88	80 thru 10 M	1500 W PEP	SO-239	25 feet	18 pounds	75 mph (no guy)	1.5-1.625in.OD

CONTESTER HEADSET

HS-2400

\$119⁹⁵

Ship Code A

This heavy duty headset has washable nylon socks for comfort. Noise cancelling dynamic mic is tailored for voice range 100-8000 Hz for maximum intelligibility. Use with low impedance mic inputs. Rotatable boom shuts off mic when rotated to vertical position.



HY-GAIN BALUNS

BN-86, \$49.95.

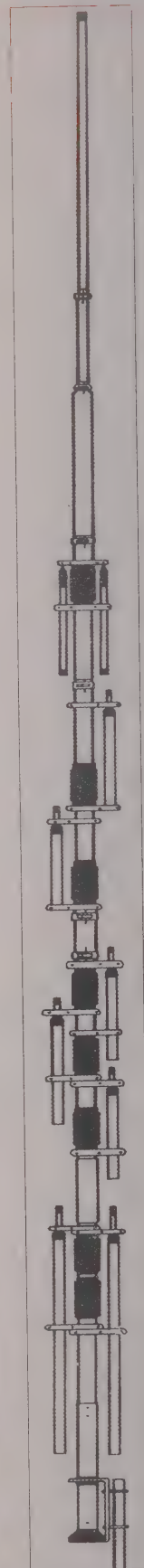
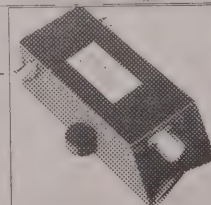
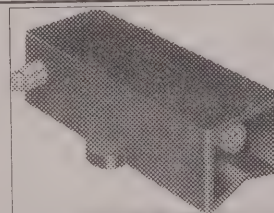
Broadband 50 Ohm ferrite balun. Useable from 3 to 30 MHz. Recommended for all HF Yagi antennas. It provides improved front-to-back ratio. Comes with clamp to bolt to boom and SO-239 connector.

BN-4000B, \$99.95.

This broadband 50 Ohm Beam current balun is potted to seal out moisture. Rated at 4000 Watts for increased power handling capabilities. Frequency range is 1 MHz to 54 MHz. comes with SO-239 connector.

BN-4000D, \$99.95. This is the same as 4000B but for dipoles

BN-4000N, \$109.95. This is the same as 4000B but has type "N" connector.



DX-88 shown

hy-gain®

Eight band AV-640 vertical antenna covers 40, 30, 20, 17, 15, 12, 10 and 6 Meters

- **No radials**
- **No ground**
- **No traps**
- **No tuning**
- **Handles 1500 Watts**

hy-gain's new PATRIOT HF verticals are the best built, best performing and best priced multiband verticals available today. Make full use of your sunspot cycle with the PATRIOT's low angle signal.

The AV-620 covers all bands 6 through 20 Meters with no traps, no coils, no radials yielding an uncompromised signal across all bands.

The AV-640 uses quarter wave stubs on 6, 10, 12 and 17 meters and efficient end loading coil and capacity hats on 15, 20, 30 and 40 meters. Instead of typical lossy can traps, the AV-640 resonators are placed in parallel not in series. End loading of the lower HF bands allows efficient operation with a manageable antenna height.

No ground or radials needed

- Effective counterpoise replaces radials
- End fed with broadband matching unit

Automatic bandswitching

- Single coax cable feed
- Each band is individually tunable
- Wide VSWR bandwidth

Sleek and low-profile

- Low wind surface area
- Small area required for mounting
- Mounts easily on decks, roofs and patios

Built-to-last

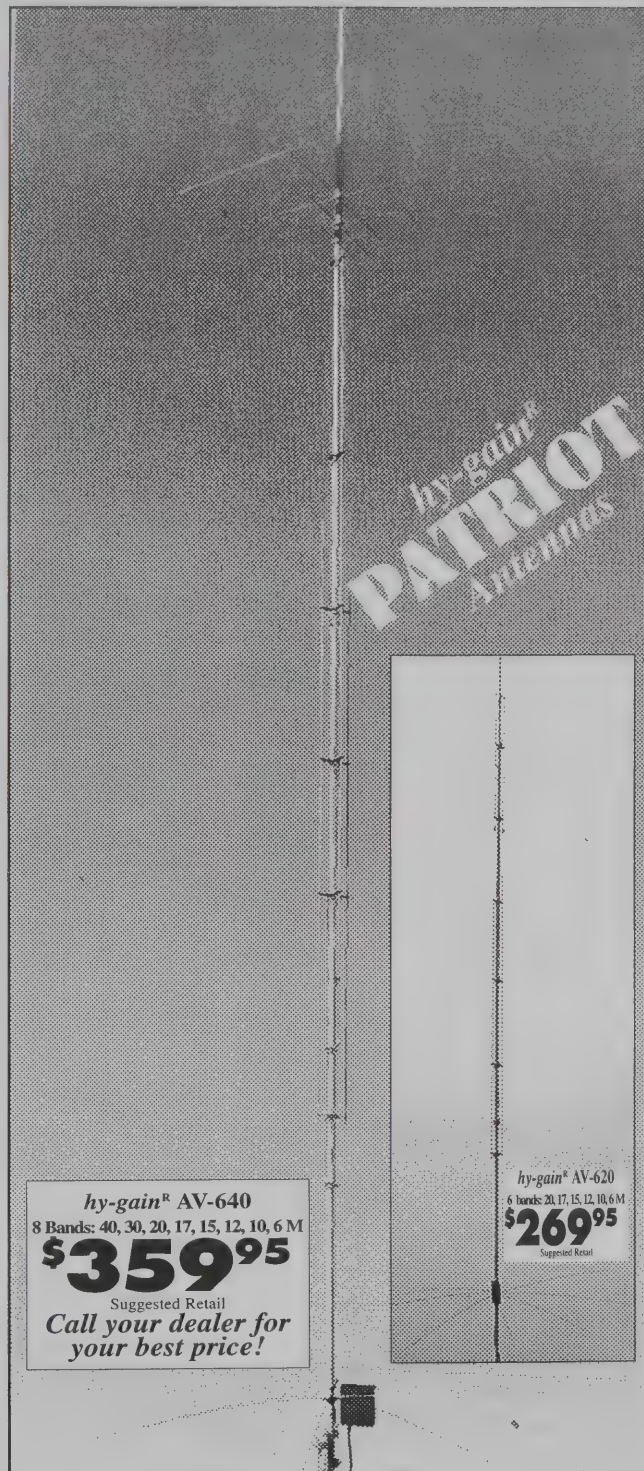
- High wind survival
- Matching unit made from all Teflon[®] insulated wire

hy-gain[®] warranty

- Two year limited warranty
- All replacement parts in stock

Contact us today!

No other amateur radio company provides the full service customer support that we do every day. Please contact us for more information on hy-gain[®] Patriot antennas. Not only do we manufacture the best designed and constructed antennas, we also manufacture satisfied customers.

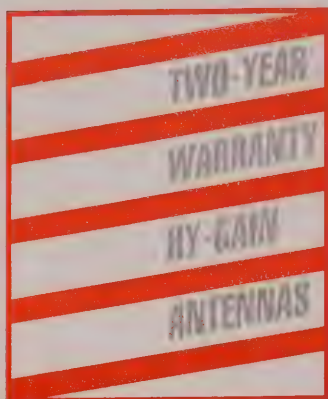


Specifications	AV-620	AV-640
Bands covered (meters)	6,10,12,15,17,20	6,10,12,15,17,20,30,40
2:1 VSWR Bandwidth (KHz)		
40M	N/A	150
30M	N/A	175
20M	500	500
17M	500	500
15M	500	500
12M	500	500
10M	1500	1500
6M	2000	1500
VSWR at resonance (typical)	1.5:1	1.5:1
Power handling (watts output) key down 2 minutes	1500	1500
Vertical radiation angle (degrees)	17	17
Horizontal radiation angle (degrees)	360	360
Height (feet)	22.5	25.5
Weight (pounds)	10.5	17.5
Wind surface area (square feet)	2.4	2.5
Wind survival (mph)	80	80

hy-gain . . . the most respected name in amateur radio

What's more important to you when you're planning your new antenna system? Is it durability?

Whatever your criteria, hy-gain's antenna products lead the pack. hy-gain's antenna products have always delivered performance, reliability and value -- from 160 Meters all the way to satellite communications. We're the only fully integrated manufacturer of amateur antenna products in the world -- antennas, rotators and towers, they're all Made In The U.S.A.



QUALITY DESIGNS

How did we become one of the most respected names in antenna products? First of all, we developed quality designs. hy-gain[®] has been manufacturing high performance antennas for over 39 years. Classic antennas such as the TH-3 and the TH-6-DXX tri-band beams set the standards for many years and introduced new design standards that now have become standards in the industry. Now our antenna design team uses the latest in computer hardware and software to aid in design development, antenna modeling and stress analysis.

HIGH QUALITY MATERIALS

Nobody likes a product that falls apart; especially one like an antenna that is usually mounted in an inconvenient spot like the top of a tower. Unlike many of our competitors, we use high quality materials and parts in all of our products. In this age of "You get what you pay for," our antenna products typically last years longer than our competitor's. From thick-wall aluminum tubing, stainless steel nuts and bolts to machine formed and die cast brackets, every part is selected for durability and ruggedness. That's why many of our antennas can survive winds of 100 miles per hour.

ANTENNA RANGE TESTED

hy-gain[®] is the only manufacturer of amateur radio products that has a professional antenna range at their factory. Our antenna testing range, with multiple towers, enables us to thoroughly test every design to ensure its performance. This is a luxury that our competitors just can't afford.

QUALITY ASSURANCE

MANUFACTURING

Innovative amateur radio antenna designs combined with our high quality materials are just a part of our story. hy-gain[®] also manufactures military and commercial antennas, rotators and towers so our amateur products are subject to the same high level quality assurance standards as our military and commercial products. You won't make any compromises when you buy and install hy-gain[®] antenna products.

SUPERB HY-GAIN WARRANTY

All hy-gain[®] amateur radio antennas come with a two year limited warranty. Rotators and towers are covered by a one year limited warranty. We can offer this warranty because the products are made of high quality materials, under controlled production operations, in-process inspection and a vigorously applied Quality Assurance Program.

For your nearest hy-gain dealer or to order: call 800-973-6572

OFFICE ADDRESS: hy-gain, 300 Industrial Park Road, Starkville, MS 39759 USA

• **VOICE:** 662-323-9595 • **FAX:** 662-323-6551 • **WEB SITE:** <http://www.hy-gain.com>

For technical information and part orders:

FACTORY ADDRESS: 308 Industrial Park Road, Starkville, MS 39759 USA

Voice: 662-323-9538 • **FAX:** 662-323-5803

All prices and specifications are subject to change without notice or obligation. Catalog # 0-2/00 © 2000, hy-gain.

hy-gain

300 Industrial Park Road
Starkville, MS 39759 USA

TO:

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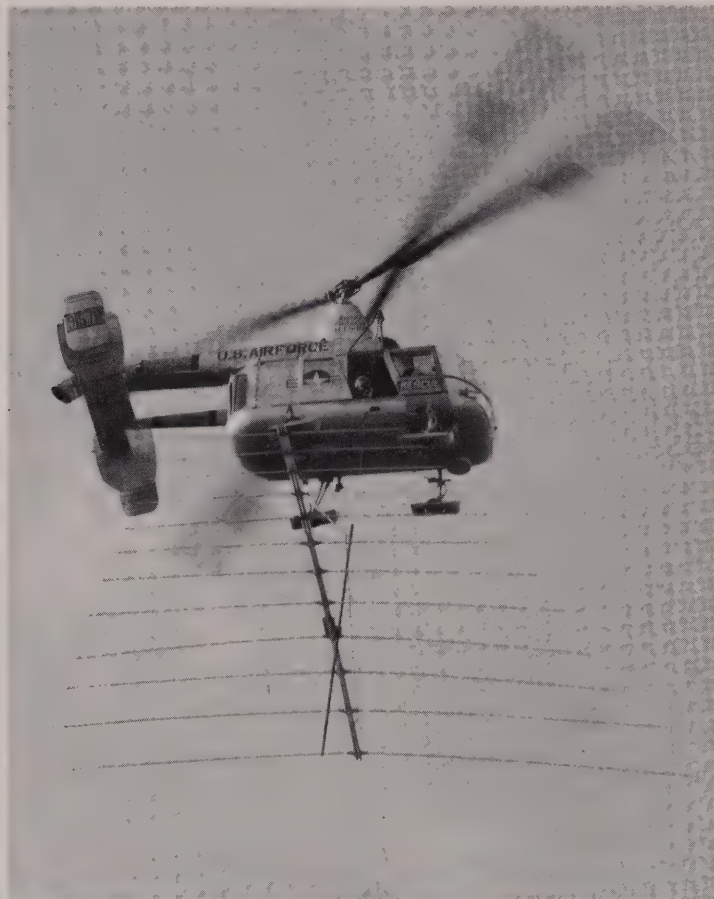
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PAID
Miss. State,
MS 39762
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hy-gain[®]

**Antennas,
Towers,
Rotators and
Accessories
for Amateurs Worldwide.**

1987-88 Edition

When you select a **Telex/Hy-Gain** product . . .



As a customer you benefit in many ways when you select Telex/Hy-Gain products. Some benefits are obvious, others may not be. For example, Telex is a well established manufacturer in such diverse fields as hearing aids, slide projectors, aviation headsets, or high speed audio cassette copiers. These and other products are sold world wide in over 80 countries. Obviously, the company has grown to its present size by delivering a reliable product and good service.

Of more immediate interest to you may be the fact that in 1978 Telex purchased the antenna portion of Hy-Gain Electronics. In 1981 the company acquired the antenna rotator systems portion of CDE. These acquisitions, and the development of an antenna tower line, indicate the company's commitment to the industry. It should be noted that Telex/Hy-Gain makes not only an extensive line of amateur radio antennas, rotators, and towers, but that it is also a major supplier of such products for commercial, industrial and



military applications. And so, as a large scale manufacturer we have facilities and capabilities that small factories simply do not have and cannot afford.

New Designs

Our staff of varied engineering disciplines is interfaced to advance the state-of-the-art. For example, wave propagation calculations are one of the largest variables in r.f. communications. It is a science heavily based on historical statistics of the characteristics of the earth's surface, effects of the sun on reflective layers of the ionosphere and many other fixed and variable parameters. Using computer programmed propagation predictions and analyses of radiation patterns we continue to improve on antenna designs. Other computer programs enable us to achieve reliable mechanical integrity through stress analyses and careful materials selection for antennas and towers.

Yet, we don't produce on theory alone. The Hy-Gain plant in Lincoln, Nebraska, is on a 35 acre (150,000 m²) government approved antenna test range. Here we test new designs under actual field conditions with sophisticated test equipment, measuring all conceivable performance parameters. All such test equipment is maintained by a regular calibration program for continuous accuracy.

Antenna Materials

Hy-Gain was among the first to select thick wall 6063-T832 aluminum tubing for antennas for maximum strength. All antenna order numbers that include an S (for example 395S for model Explorer 14) feature passivated stainless steel hardware that is corrosion resistant for long life.

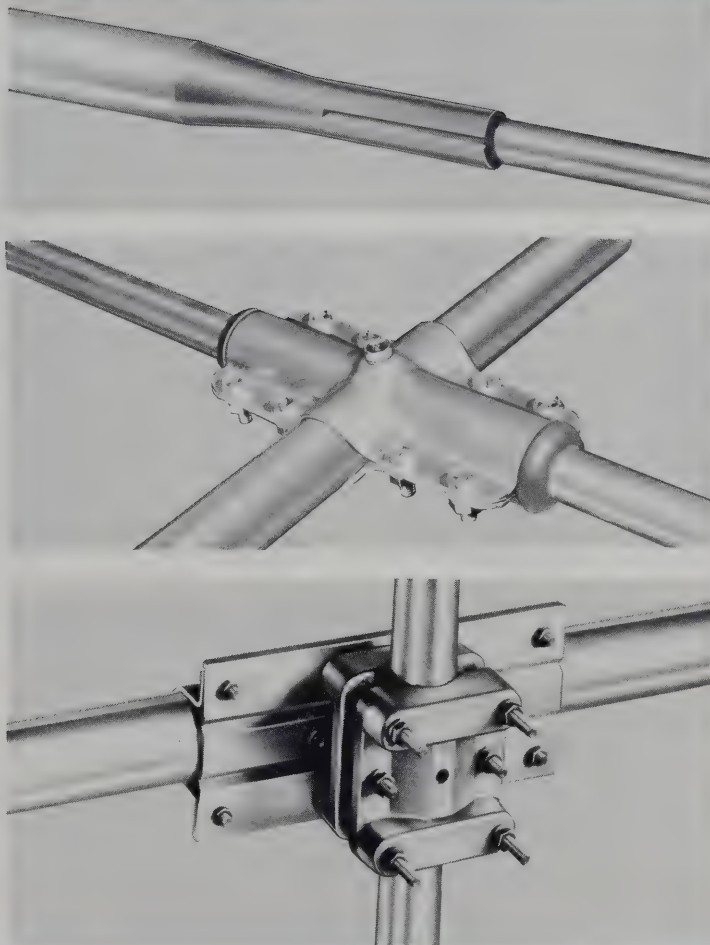
TELEX®

hy-gain

Tooled Manufacturing

Dies and special tools for manufacturing are very expensive. That is why small antenna companies often use standard tubing and ordinary bolts, nuts and clamps to make their product. Such antennas usually are heavy, difficult to assemble, require repeated adjustments and sometimes even look crude.

Hy-Gain antennas feature tapered tubing that fits properly, is easily and securely clamped in place and reduces wind surface area. Our unique, die-cast aluminum tiltable boom-to-mast bracket or the element to boom compression clamps are made with specially tooled machinery to bring you a finished product. Plastic parts are precision made by injection molding. All tubing is deburred and cleaned for smooth and easy assembly.



Specifications and Manuals

Obviously all makes of antennas are advertised with high performance specifications. Hy-Gain's specifications and performance data for amateur antennas are conservatively based on the same standards applicable to commercial and military antennas. But, you don't have to take our word for it. Just read any of the test reports published in various amateur radio publications, or better still, ask another amateur who uses our product.

Hy-Gain manuals give detailed, step-by-step instructions with ample illustrations, charts, graphs and helpful hints. We've had compliments for our manuals even from competitors.

Customer Service

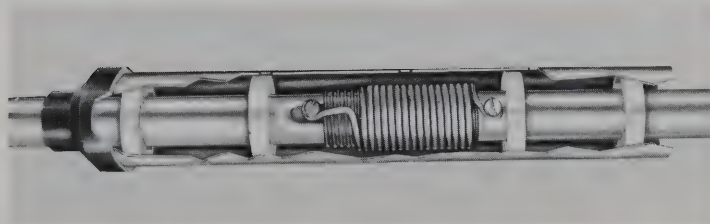
We always aim to provide the best possible service to you, before or after you purchase a Telex/Hy-Gain product. You can always write to our Amateur Radio Customer Service Department. Now we've added a Customer Service Hot Line Monday through Friday, 8 am - 4 pm Central Time. For technical information, trouble shooting or nearest dealer call toll free

1-800-328-3771

In Minnesota call 612-887-5530. To order parts for antennas or rotators call 1-402-467-5321.

Traps

Hy-Gain traps are individually tuned to within 0.10% of the resonant frequency. No other traps made come even close to this tolerance. Our single, heavy wire coil eliminates heat build-up for high radiation efficiency. It also allows full power rating on RTTY continuous duty.



Triband—Monoband Directional Antennas

HF Antenna Specifications

ORDER NO.	MODEL NO.	MAXIMUM GAIN		FRONT-TO-BACK RATIO	NUMBER OF ELEMENTS	BANDWIDTH @ 2:1 VSWR	LONGEST ELEMENT		BOOM LENGTH		BOOM DIAMETER		TURNING RADIUS		MAXIMUM MAST DIAMETER ACCEPTED	BANDS	WIND LOAD @ 80 MILES PER HOUR (128 km./hr.)		MAXIMUM WIND SURVIVAL		SURFACE AREA		SHIPPING WT.	
		dB	dB				MHz	ft.	m.	ft.	m.	in.	mm.	ft.			m.	in.	mm.	Meters	lbs.	kg.	mph	km./hr.
391-S	TH7DX	9.6	27	7	—	31	9.4	24	7.3	2	50.8	20	6.1	2½	63.5	20, 15, 10	240	108.9	100	161	9.4	.87	82	37
395-S	EXP14	8.8	27	4	—	31.5	9.6	14.1	4.3	2	50.8	17.25	5.3	2½	63.5	20, 15, 10	192	86.1	100	161	7.5	.69	50	23
396-S	QK710	1.7	25*	1	—	42.5	12.9	—	—	—	—	21.25	6.5	—	—	40	210	95.3	80	50	8.2	.76	10	4.5
—	—	1.7	25*	1	—	31	9.5	—	—	—	—	17.25	5.3	—	—	30	205	93	80	50	8	.74	10	4.5
221-S	TH3JRS	8	25	3	—	27.4	8.3	12	3.7	1¼	31.8	14.3	4.4	2	50.8	20, 15, 10	87	39.5	80	128.7	3.4	.32	20	9
393-S	TH5Mk2	9	27	5	—	31.5	9.6	19	5.8	2	50.8	18.4	5.6	2½	63.5	20, 15, 10	190	86	100	160.9	7.4	.68	77	35
390-S	TH2Mk3S	5.5	20	2	—	27.3	8.3	6	1.8	2	50.8	14.3	4.4	2	50.8	20, 15, 10	83	37.6	80	128.7	3.3	.31	22	10
375-S	105BAS	12	34	5	1.5	18.5	5.6	24	7.3	2	50.8	15	4.6	2½	63.5	10	100	45.4	100	160.9	3.9	.36	29	13
376-S	155BAS	12	34	5	.4	24.5	7.5	26	7.9	2	50.8	17.5	5.3	2½	63.5	15	133	60.3	100	160.9	5.2	.48	42	19
377-S	205BAS	11.6	35	5	.5	36.5	11.1	34	10.4	2	50.8	25	7.6	2½	63.5	20	230	104.3	80	128.7	9	.84	77	35
394-S	204BAS	10	30	4	.5	36.5	11.1	26	7.9	2	50.8	22.5	6.7	2½	63.5	20	186	84.4	100	160.9	7.3	.68	55	25
371-S	DISC7-1	1.7	35*	1	.22	45	13.7	2.7	.66	2	50.8	22.5	6.7	2½	63.5	30, 40	69	31	100	160.9	2.7	.25	23	10.3
372-S	DISC7-2	6.5	15	2	.187	44.8	13.7	22.6	6.9	2	50.8	25	7.6	2½	63.5	40	154	69	80	128.7	6	.56	56.5	25.3
373-S	DIR	8.7	26	3	.160	45.6	13.9	35	10.79	2	50.8	28.7	8.8	2½	63.5	40	230	103	80	128.7	9	.84	98	44
LP1007	LP1007	13.5	14	12	—	38	11.6	26.5	8.1	—	—	22.5	6.9	2½	63.5	20, 17, 15, 12, 10	442	200.5	80	128.7	17.3	1.61	335	152
LP1017	LP1017	10-12	10	17	—	40	12.2	37	11.3	—	—	25	7.6	2¼	57.1	40, 30, 20, 17, 15, 12, 10	850	385.6	80	160.9	33.2	3.1	635	288

*Front to side ratio

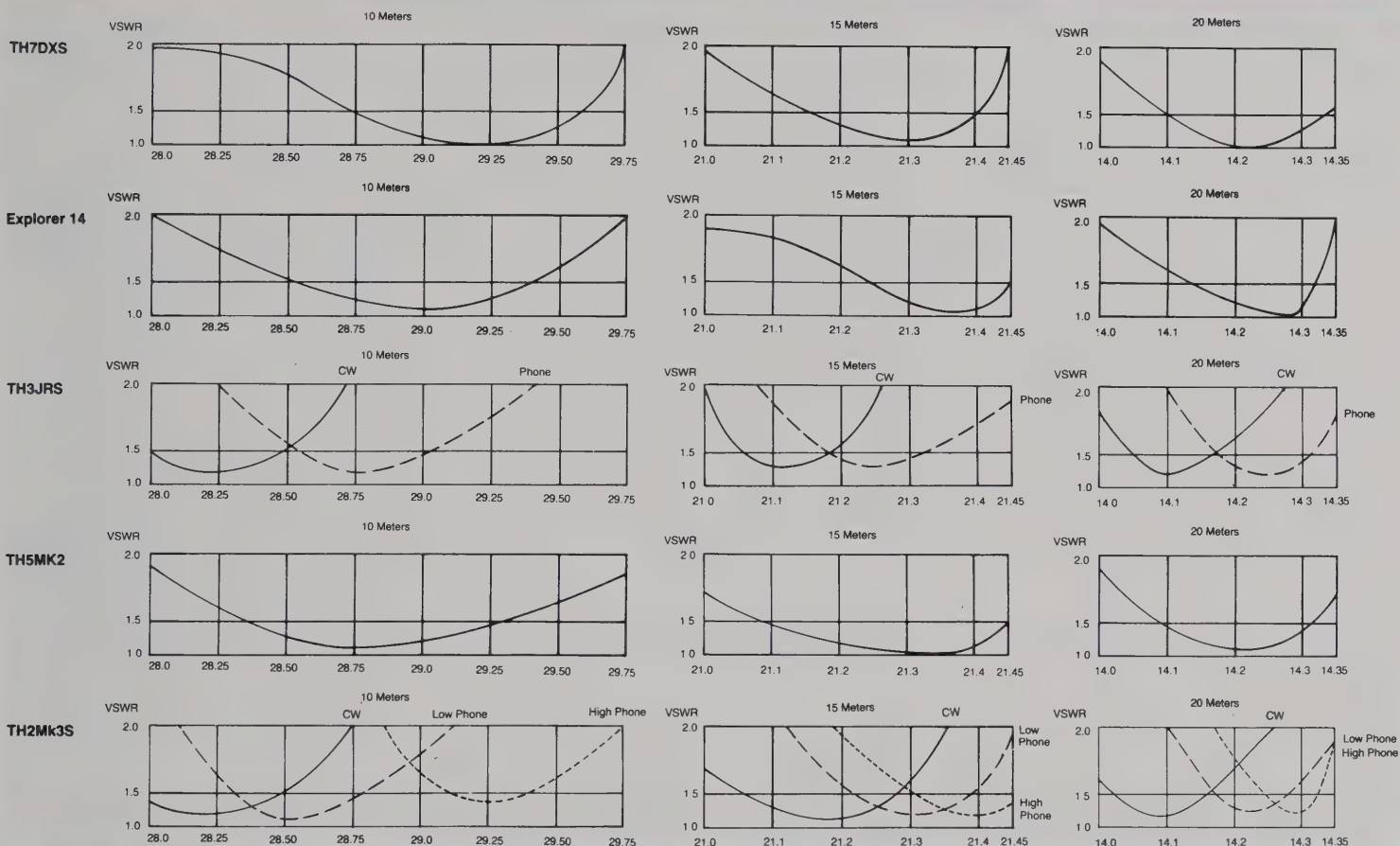
TELEX®

hy-gain

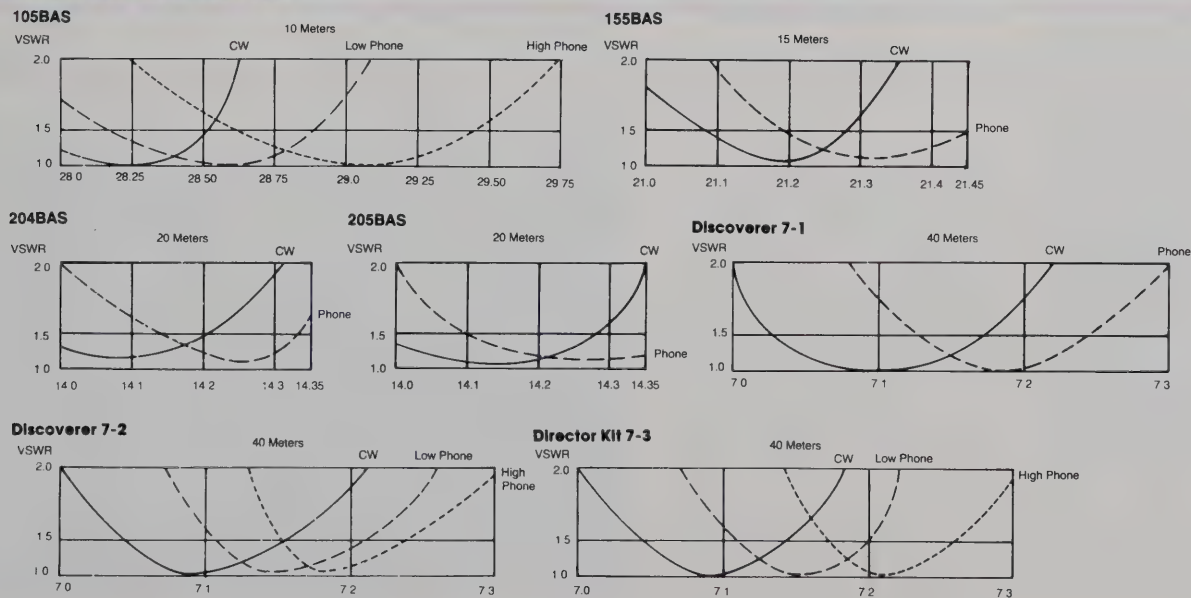
HF Directional Antenna SWR Curves

Measured at actual feed point

Multiband Beams



Monoband Beams



HF Tribanders World Famous Thunderbirds



TH7DX

7-Element, Broadband Triband Beam

10, 15, 20 meters

This amazing new tribander, using a dual driven 7 element system on a 24' (7.3 m) boom maintains a VSWR of less than 2:1 on all bands, including ALL of ten meters. No compromise on

gain performance was needed to achieve this efficiency. A unique combination of trapped and monoband parasitic elements produces a front-to-back ratio of 27 dB. In a parasitic array such as this, high efficiency traps are used rather than parallel stubs. These Hi-Q traps are capable of handling the maximum legal

power with a 2:1 safety margin, and are superior to parallel stubbing for ease of assembly and maintenance. The TH7DX uses stainless steel hardware for all electrical—and most mechanical connections plus taper swaged 6063-T832 thick wall aluminum tubing. The antenna includes exclusive, die-

cast aluminum, rugged boom-to-mast clamp, and heavy gauge element-to-boom brackets. The TH7DX comes complete with a Hy-Gain BN-86 balun.

ORDER NO. 391S

Shipping Wt: 82 lbs. (37 kg)
UPS Shippable

Model 392S

Conversion Kit

You can convert your Hy-Gain TH6DXX to the new high performance broadband TH7DX. The conversion kit includes a complete stainless steel hardware package and complete easy-to-follow instructions.

ORDER NO. 392S

Shipping Wt: 20 lbs. (9 kg)
UPS Shippable

Balun

A Hy-Gain BN-86 balun is required but not supplied with the 392S conversion kit.

ORDER NO. 242S

TH2Mk3S

2-Element Triband Beam

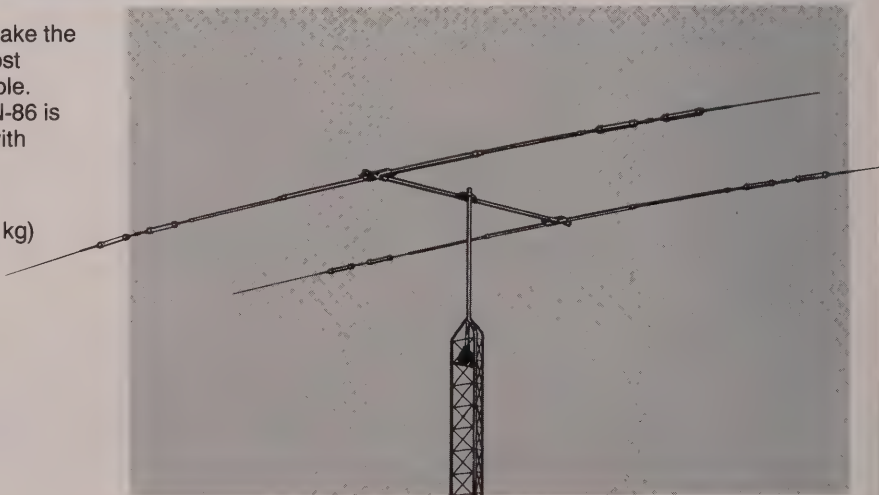
10, 15, 20 meters

Hy-Gain's Model TH2Mk3S is a ruggedly constructed, top-performing, compact tribander that installs almost anywhere, and can be rotated with a CD 45II or HAM IV rotator. Featuring air dielectric Hy-Q traps, which handle the maximum legal power. It feeds with 52 ohm coax, is Beta Matched for 5.5 dB gain, and delivers maximum F/B ratio without compromise. VSWR is less than 1.5:1 at resonance on all bands. Taper swaged, slotted tubing with stainless steel

hardware and clamps make the TH2Mk3S one of the most rugged antennas available. Hy-Gain ferrite balun BN-86 is recommended for use with TH2Mk3S.

ORDER NO. 390S

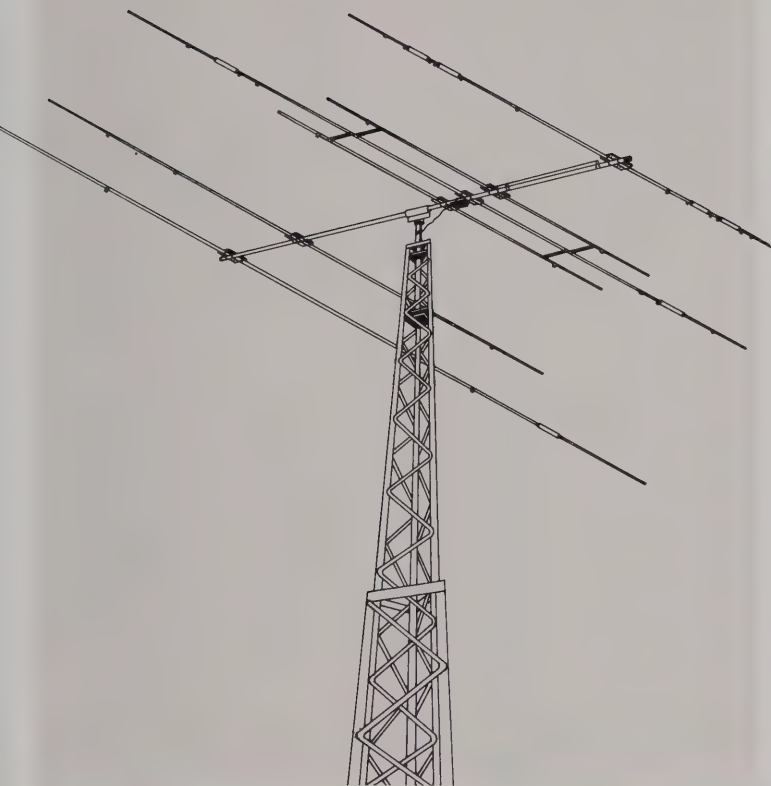
Shipping Wt: 22 lbs. (10 kg)
UPS Shippable



TELEX®

hy-gain

Para-Sleeve
Patent No.
4,604,628
Aug. 5, 1986



EXPLORER 14

Broadband Tribander Beam with Quad-Band Option

10, 15, 20 meters

A unique Para-Sleeve concept optimizes edge-to-edge bandwidth on 20, 15 and 10 meters. Solid state transceivers load to full output with VSWR below 2:1 so no antenna tuner is needed. Handles maximum continuous legal power with a respectable safety margin. The revolutionary compact design requires only 17'3" (5.3 m) turning radius and the entire assembly fits on roof tripod, mast or medium duty tower. Truly competitive performance against giant tribanders at half the cost. Superior construction includes

stainless steel hardware, heavy gauge pre-formed element and mast brackets and thick wall swaged aluminum tubing. A BN-86 balun is included and a Beta Match provides DC ground to reduce lightning hazard and static. Rugged, easily assembled and so unique we've applied for a patent.

ORDER NO. 395S

Shipping Wt: 50 lbs. (22.7 kg)
UPS Shippable

Quad Band Option 30 or 40 meters

Add a fourth band to the Explorer 14 with the QK710 kit. Kit attaches to the driven element and is easily adjusted for either 30 meters (WARC) or 40 meters.

ORDER NO. 396S

UPS Shippable

TH3JRS

3-Element Triband Beam

10, 15, 20 meters

Hy-Gain's Thunderbird Junior offers top performance with a compact design that makes it ideal where space is a limiting factor. Featuring separate and matched air dielectric Hy-Q traps for each band, it feeds with 52 ohm coax, delivers maximum F/B ratio without compromise. The TH3JRS has a VSWR of less than 1.5:1 at resonance on all bands. All hardware and clamps are stainless steel. Maximum power, 300 watts CW and 600 watts PEP output. Hy-Gain ferrite balun BN-86 is recommended for use with the TH3JRS.

ORDER NO. 221S-1

Shipping Wt: 20 lbs. (9 kg)
UPS Shippable



TH5Mk2

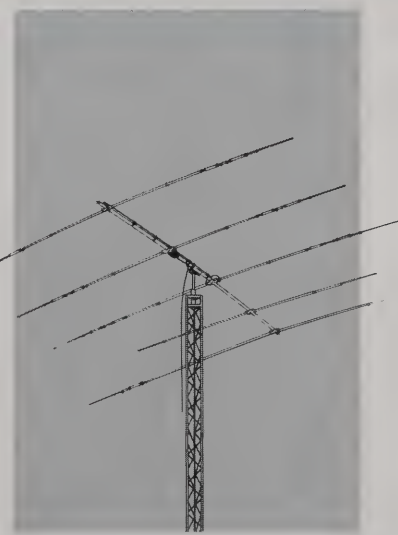
5-Element Broadband Triband Beam

10, 15, 20 meters

The TH5 is now a BROADBAND TRIBAND! The TH5Mk2 offers an outstanding 9.0 dB gain. Separate air dielectric Hy-Q traps on each band allow the TH5Mk2 to be set on a F/B ratio of 27 dB with a minimum beam width. It features five elements on a 19' (5.8 m) boom with four active elements on 10, 15 and 20 meters. Also standard on the TH5Mk2 is Hy-Gain's exclusive Beta Match, and stainless steel hardware and compression clamps. A BN-86 ferrite balun is supplied.

ORDER NO. 393S

Shipping Wt: 77 lbs. (35 kg)
UPS Shippable



40 Meter **Discoverer Series**

*Dipole or
Monoband Beam*

When declining sunspot activity virtually eliminates operation on 20 meters, communications move to 40 meters. Hy-Gain offers you several options with wide bandwidth and Hi-Q efficiency without coils. A low voltage feed point eliminates insulator failure and assures that the antenna can handle twice the new U.S. legal power limits.

Discoverer 7-1

A rotatable dipole of low weight and wind surface area so it easily fits most existing beam installations. This antenna can be tuned to either, 30 or 40

meters with a front to side ratio of 30 dB for a fast, inexpensive expansion of band capability. Feeds with 52 ohm coax. Comes with pre-formed mast clamp.

ORDER NO. 371S

Shipping Wt: 23 lbs. (10 kg)
UPS Shippable

Discoverer 7-2

A two-element 40 meter beam with 6.5 dB gain, 15 dB F/B ratio and VSWR of 1.5:1 at resonance. A unique hairpin loading system delivers superior performance without high loss coils. Feeds with 52 ohm coax and comes

factory pretuned with Hy-Gain's exclusive Beta Match for reduced lightning hazard. Tilttable boom to mast bracket and stainless steel hardware is included. Hy-Gain ferrite balun BN-86 is recommended.

ORDER NO. 372S

Shipping Wt: 56.5 lbs. (25.3 kg)
UPS Shippable

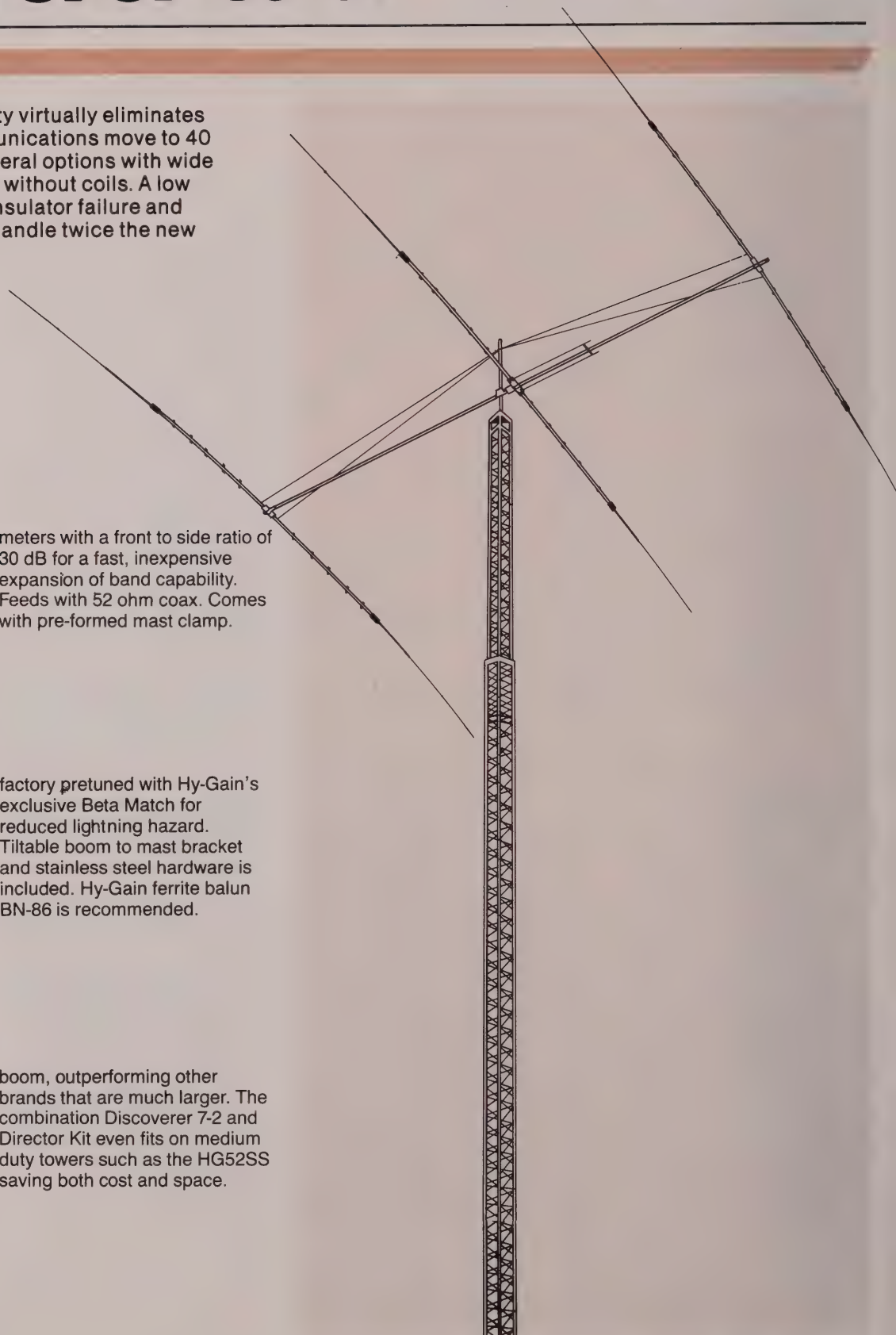
Director Kit 7-3

Converts the Discoverer 7-2 into a three-element beam with 8.7 dB gain and a F/B ratio of 26 dB; almost doubling the two-element performance. Even more amazing, it's all on a 35' (10.7 m)

boom, outperforming other brands that are much larger. The combination Discoverer 7-2 and Director Kit even fits on medium duty towers such as the HG52SS saving both cost and space.

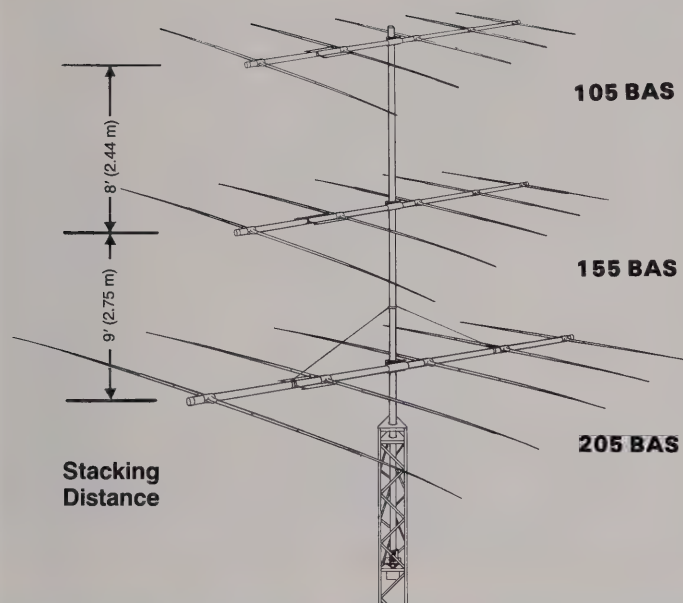
ORDER NO. 373S

Shipping Wt: 41.50 lbs. (18.8 kg)
UPS Shippable



HF Monobanders *World Famous* Long Johns

Minimal Weight—Maximum Strength



Stacking
Distance

**NOW
USEABLE
BY NOVICE
& TECHNICIAN**

105BAS

10 Meter

Five elements on a 24' (7.3 m) boom. Exclusive 52 ohm Beta Match. A substantial 12 dB gain, with a F/B ratio of 34 dB. Excellent DC ground. Stainless steel hardware and clamps.

ORDER NO. 375S

Shipping Wt: 29 lbs. (13.2 kg)
UPS Shippable

155BAS

15 Meter

Five elements on a 26' (7.9 m) boom. Exclusive 52 ohm Beta Match. A 12 dB gain, and a F/B ratio of 34 dB. Excellent DC ground. Stainless steel hardware and clamps.

ORDER NO. 376S

Shipping Wt: 42 lbs. (19.1 kg)
UPS Shippable

205BAS

20 Meter

Five elements on a 34' (10.4 m) boom. Exclusive 52 ohm Beta Match. An impressive 11.6 dB gain, with a F/B ratio of 34 dB. Excellent DC ground. Stainless steel hardware and clamps.

ORDER NO. 377S

Shipping Wt: 77 lbs. (35 kg)
Motor Freight Only

BN-86 BALUN

Broadband 50 ohm ferrite balun. Useable from 3 to 30 MHz. Recommended for all HF Yagi antennas. It provides improved front-to-back ratio. Comes with clamp to bolt to boom and S0239 connector.

ORDER NO. 242S



204BAS

20 Meter

Four elements on a 26' (7.9 m) boom. Feeds with 52 ohm coax and is Beta Matched for 10 dB gain. The 204BAS has a tiltable cast aluminum boom-to-mast clamp, heavy gauge machine-formed element-to-boom brackets and stainless steel hardware and clamps. BN-86 balun is recommended for use with model 204BAS.

ORDER NO. 394S

Shipping Wt: 55 lbs. (24.9 kg)
UPS Shippable



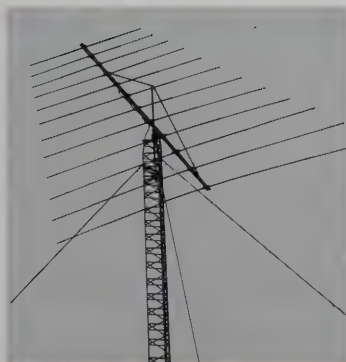
HF Log Periodics

LP-1007

for 20, 17, 15, 12 and 10 meters
The Hy-Gain LP-1007 provides continuous frequency coverage from 13 to 30 MHz with 13.5 dB gain, and may be operated in or out of the amateur bands with consistent results. Has a 26.5' (8.1 m) boom.

ORDER NO. LP-1007

Shipping Wt: 335 lbs. (152 kg)
Motor Freight Only



LP-1017

for 40, 30, 20, 17, 15, 12 and 10 meters
LP-1017 provides continuous frequency coverage across 6.2 through 30 MHz with 10-12 dB gain covering all of the 10 through 40 meter bands in a single system.

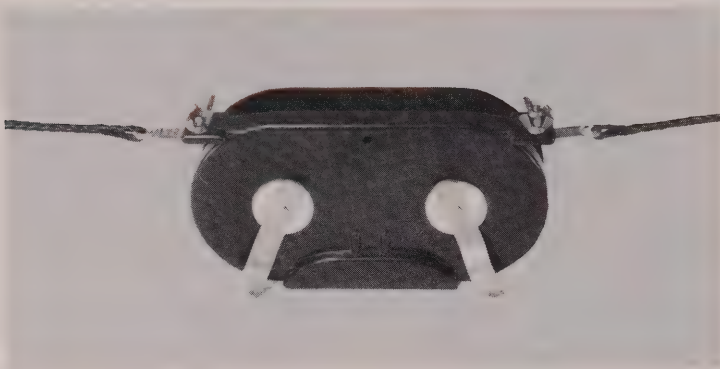
ORDER NO. LP-1017

Shipping Wt: 635 lbs. (288 kg)
Motor Freight Only



HF Doublets Antenna Accessories

HF Doublets



18TD

Reel Tape Portable Dipole

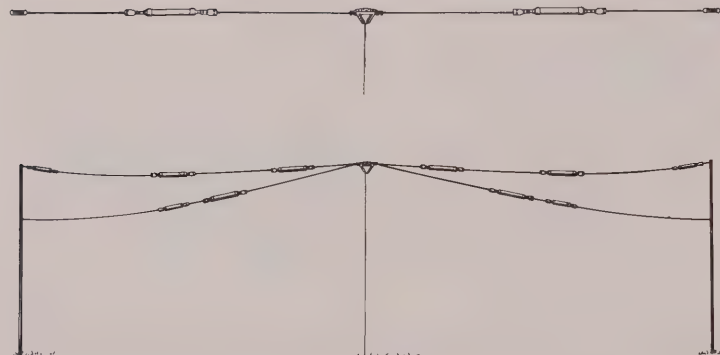
Adjustable 10-80 meters

The Hy-Gain 18TD is a high performance, portable or semi-permanent doublet antenna system. A frequency-to-length conversion chart calibrated to frequency measurements on the tapes is integrated in the high

impact housing for fool-proof installation. Feeds with 52 ohm coax and measures 10" (254 mm) x 5 1/2" (140 mm) x 2" (50.8 mm) retracted. SO-239 input connector.

ORDER NO. 228

Shipping Wt: 4.1 lbs. (1.9 kg)



2BDQS and 5BDQS

Multiband Hy-Q trap doublets 2BDQS for 80 and 40 meters maximum length of dipole, 101' (30.5 m). 5BDQS for 80 through 10 meters maximum length of dipole, 94' (28.7 m). The Hy-Gain 2BDQ are Hy-Q trap doublets designed for horizontal or inverted "V" high power

installations. Both feature individually pretuned matched traps for each band. 52 ohm feed. Co-axial cable not included.

ORDER NO. 380S (for 2BDQ)
Shipping Wt: 7.5 lbs. (3.4 kg)

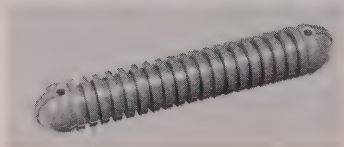
ORDER NO. 383S (for 5BDQ)
Shipping Wt: 12.2 lbs. (5.5 kg)

Accessories



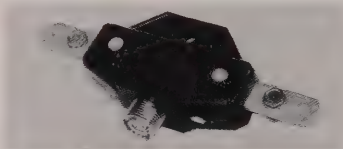
CI

Center insulator for multiband doublets. Accepts 1/4" or 3/8" coax.
ORDER NO. 155S



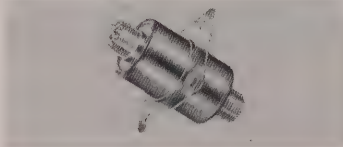
EI

End insulators for multiband doublets. Pair of 7" (178 mm) heavily serrated end insulators.
ORDER NO. 156



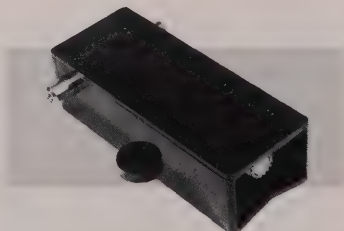
CIC

Center insulators for multiband doublets. With built in SO-239 connector.
ORDER NO. 157S



LA-1

Lightning arrestor. Useable for 1.8 to 54 MHz. Will safely by-pass to ground ten plus lightning strikes. SO-239 connector.
ORDER NO. 229



BN-86

Broadband 50 ohm ferrite balun. Useable from 3 to 30 MHz. SO-239 connector.
ORDER NO. 242S

HF Multiband Verticals

Specifications

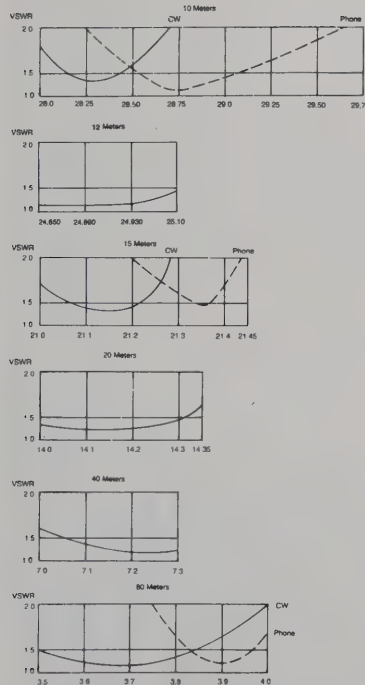
ORDER NO.	MODEL NO.	OVERALL LENGTH		MAXIMUM MAST DIAMETER ACCEPTED		BANDS	WIND SURVIVAL		SHIPPING WEIGHT	
		ft.	m	in.	mm		mph	km/hr.	lbs.	kg
182S	18HTS	50	15.2	Tower Supplied		80-10*	80	128	117	53
386S	18AVT/WBS	25	7.6	1 $\frac{5}{8}$	41.3	80-10	80	128	12	5.4
385S	14AVQ/WBS	18	5.5	1 $\frac{5}{8}$	41.3	40-10	80	128	8.2	3.7
193S	18VS	18	5.5	1 $\frac{5}{8}$	41.3	80-10	80	128	4.6	2.1
384S	12AVQS	13.5	4.1	1 $\frac{5}{8}$	41.3	20-10	80	128	7	3.1

*Includes new 12 meter WARC band without modifications. Optional kits available for 160 meter operation.

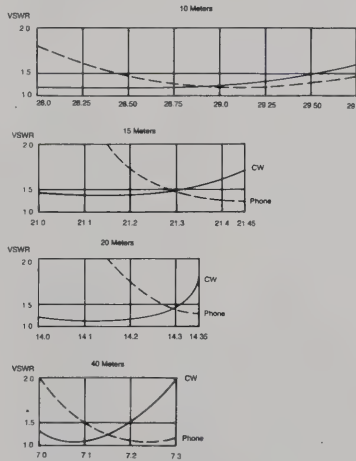
HF Vertical Antenna SWR Curves

Measured at actual feed point

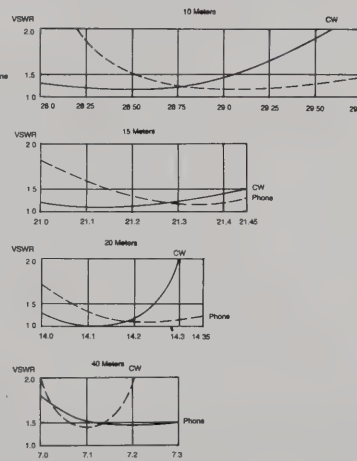
18HTS



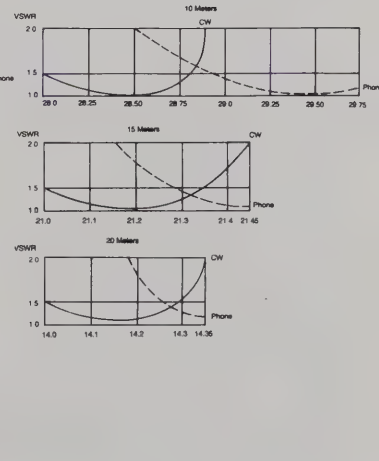
18AVT/WB



14AVQ/WB



12AVQ/WBX



Note: The tip rod can be adjusted for any frequency from 3.5 MHz to 4.0 MHz.

The CW curve is used with the LC 160Q coil option.

HF Multiband Verticals

18HTS

for 80 through 10 meters

The 18HTS features automatic band selection achieved through a unique stub decoupling system which effectively isolates various sections of the antenna so that an electric $\frac{1}{4}$ wavelength (or odd multiple of a $\frac{1}{4}$ wavelength) exists on all bands. Approximately 250 kHz band width at

2:1 VSWR on 80 meters. With the addition of a base loading coil, it also provides exceptional 160 meter performance. Includes all stainless steel hardware, and tilt-over base.

ORDER NO. 182S

Shipping Wt: 117 lbs. (53 kg)
Motor Freight Only

18HTS works on 24 MHz without modification. Kits available for 160 meter operation. MK160A and LC160Q.

18AVT/WBS

for 80 through 10 meters

Five band capability with automatic band switching is accomplished through the use of three improved Hy-Q traps featuring large diameter coils for a more favorable L/C ratio. 2:1 or lower SWR at band edges on 40-10 meters. Approximately 40 kHz band width below 2:1 VSWR on 80 meters. Includes all stainless steel hardware and SO239 input connector.

ORDER NO. 386S

Shipping Wt: 12 lbs. (5.4 kg)
UPS Shippable

14AVQ/WBS

for 40 through 10 meters

A self-supporting, automatic band switching vertical that delivers outstanding performance with exceptional L/C ratio and a very low

angle radiation pattern. Includes all stainless steel hardware and SO239 input connector.

ORDER NO. 385S

Shipping Wt: 8.2 lbs. (3.7 kg)
UPS Shippable

12AVQS

for 20, 15, and 10 meters

A completely self-supporting triband vertical antenna. It delivers exceptionally low angle radiation with 1.5:1 VSWR or less on all three bands. Includes all stainless steel hardware and SO239 input connector.

ORDER NO. 384S

Shipping Wt: 7 lbs. (3.2 kg)
UPS Shippable

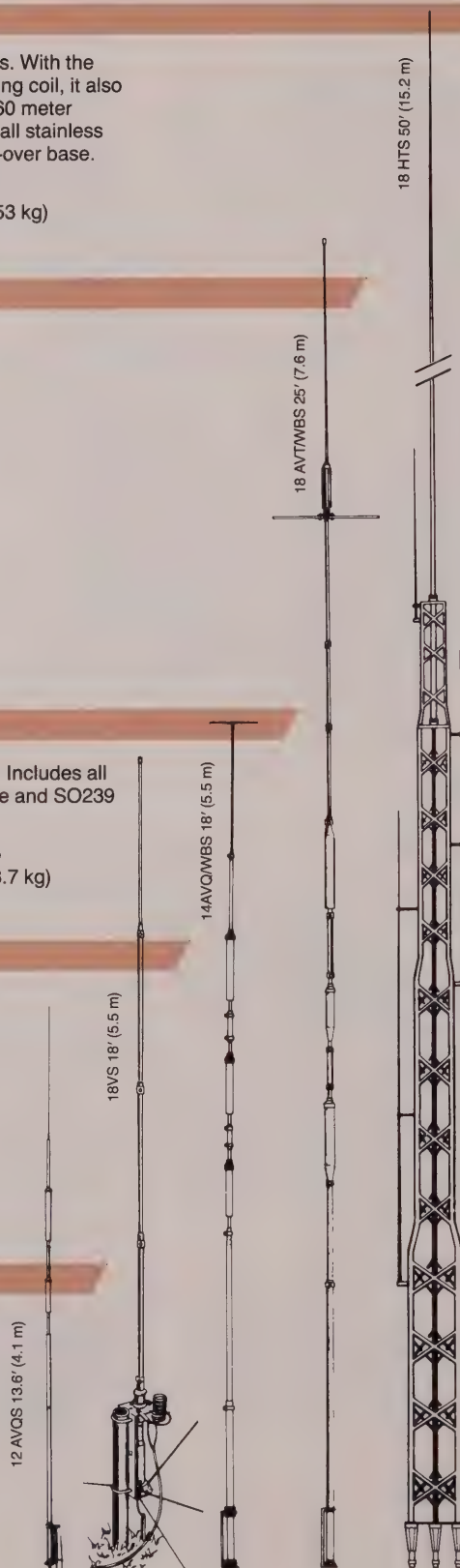
18VS

80 through 10 meters continuous. Also ideal for short wave listening.

This 18' (5.5 m) radiator has a loading coil at base that allows precision antenna resonating. The 18VS may be installed on a short $1\frac{5}{8}$ " (42 mm) diameter mast driven into the ground.

ORDER NO. 193S

Shipping Wt: 4.6 lbs. (2.1 kg)
UPS Shippable



14RMQ

Roof Mounting Kit

The 14RMQ roof mounting kit provides rugged support for Hy-Gain Models 18AVT/WBS, 18VS, 14AVQ/WBS and 12AVQS. Kit includes base plate, mast, radial/guy wires, and mounting hardware.

ORDER NO. 184

Shipping Wt: 6.7 lbs. (3 kg)
UPS Shippable

VHF Beams and Verticals

Specifications

ORDER NO.	MODEL NO.	MAXIMUM GAIN			MHz	MAXIMUM FRONT-TO-BACK RATIO		NUMBER OF ELEMENTS	BANDWIDTH @ 2:1 VSWR	LONGEST ELEMENT	BOOM LENGTH		BOOM DIAMETER		TURNING RADIUS		MAXIMUM MAST DIAMETER ACCEPTED	BANDS	WIND LOAD @ 80 MILES PER HOUR (129 km./hr.)		MAXIMUM WIND SURVIVAL	SURFACE AREA		SHIPPING WT.	
		dB	dBi			ft.	m.				ft.	m.	in.	mm.	ft.	m.			in.	mm.		Meters	lbs.	kg.	M.P.H.
230S-1	64BS	8.2*	25	4	2	9.9	3	12	3.7	1¼	31.8	8	2.4	2	50.8	6	28.2	12.8	100	160.9	1.1	.10	10	4.5	
214S-1	214BS	13*	20	14	4	3.3	1	15.5	4.7	1¼	31.8	8	2.4	2	50.8	2	42.2	19.1	80	128.7	1.7	.16	7.5	3.4	
208S-1	28BS	11.8*	20	8	4	3.3	1	12.3	3.4	1¼	31.8	6.25	1.9	2	50.8	2	32.3	14.6	80	128.7	1.3	.12	5.6	2.3	
205S-1	25BS	9.1*	20	5	4	3.3	1	6.25	1.9	1¼	31.8	6.1	1.9	2	50.8	2	18.9	8.6	80	128.7	.74	.07	5	2.2	
203S-1	23BS	6.1*	20	3	4	3.35	1	3.6	1.1	1¼	31.8	3.6	1.1	2	50.8	2	12.7	5.8	80	128.7	.50	.05	3	1.4	
338	GPG-2A	3.4	—	1	4	4	1.2	—	—	—	—	—	—	1½	41.3	2	—	—	100	160.9	.3	.03	2	.9	
335S	V2S	3*	—	2	7	9.3	2.8	—	—	—	—	—	—	2	50.8	2	—	—	100	160.9	.67	.06	5.5	1.6	
336S	V3S	3*	—	2	10	6.6	2	—	—	—	—	—	—	2	50.8	1¼	—	—	100	160.9	.5	.05	3.5	1.6	
337S	V4S	3*	—	2	30	3.8	1.2	—	—	—	—	—	—	2	50.8	¾	—	—	100	160.9	.28	.03	3.5	1.6	

*These Hy-Gain antennas are realistically gain-rated against a standard dipole antenna (dBd) instead of a theoretical isotropic source. Add 2.2 dB for dBi

VHF Verticals

V2S

138-175 MHz
A 2-meter vertical, 3 dBd (5.2 dBi) gain derived from the famous extended double zepp antenna design. The radiating elements are two collinear 5/8 waves fed in phase. Two sets of 1/4 wave radials properly decouple the lower radiator from the mast.

ORDER NO. 335S

Shipping Wt: 3.5 lbs. (1.6 kg)
UPS Shippable

V3S

Same as V2S above except for 220-242 MHz.

ORDER NO. 336S

Shipping Wt: 3.5 lbs. (1.6 kg)
UPS Shippable

V4S

Same as V2S above except for 400-475 MHz. With type "N" connector.

ORDER NO. 337S

Shipping Wt: 3.5 lbs. (1.6 kg)
UPS Shippable

V2S



Charts are included for pretuning to an exact frequency for amateur or commercial applications.

V3S

**NOW USEABLE
BY NOVICE & TECHNICIAN**



V4S

Charts are included for pretuning to an exact frequency for amateur or commercial applications.



VHF Beams

64BS

for 6 meters

The 64BS features a concept in beam construction that provides actual delivered performance equalling maximum theoretical gain. The 4-element 64BS generates an impressive 8.2 dBd gain.

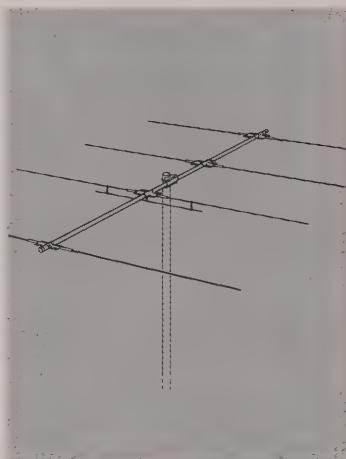
ORDER NO. 230S-1

(4-Element Beam)

Shipping Wt: 10 lbs. (4.5 kg)

UPS Shippable

VHF Beams mount horizontally or vertically.



23BS, 25BS, 28BS, 214BS

for 2 meters

These antennas include Hy-Gain's exclusive Beta Match to provide exceptional F/B ratio and maximum

obtainable gains. The 23BS (6.1 dBd gain), 25BS (9.1 dBd gain), 28BS (11.8 dBd gain) and the 214BS (13 dBd gain) gives you a wide choice of 2 meter beam performance from which to choose. Accepts up to 2" mast.



ORDER NO. 203S-1

(3-Element)

Shipping Wt: 3 lbs. (1.4 kg)

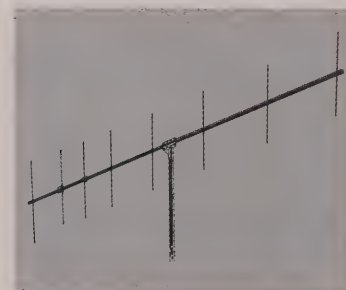
UPS Shippable

ORDER NO. 205S-1

(5-Element)

Shipping Wt: 5 lbs. (2.2 kg)

UPS Shippable

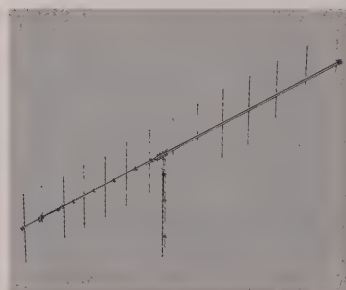


ORDER NO. 208S-1

(8-Element)

Shipping Wt: 5.6 lbs. (2.3 kg)

UPS Shippable



ORDER NO. 214S-1

(14-Element)

Shipping Wt: 7.5 lbs. (3.4 kg)

UPS Shippable

VHF Mobiles

HB-144-MAG

for 2 meters

A $\frac{5}{8}$ wave, 3 dB magnetic mount antenna with foldover feature.

ORDER NO. 287

HR-144-GRI

Ground Independent Marine Antenna for 2 meters

A 2-meter mobile or base antenna designed to operate independently of a ground plane. Minimizes pattern distortion, and maximizes range in all directions. Fiberglass-sealed antenna and feedpoint ensure top 3.9 dBd, 6 dBi performance.

ORDER NO. 270

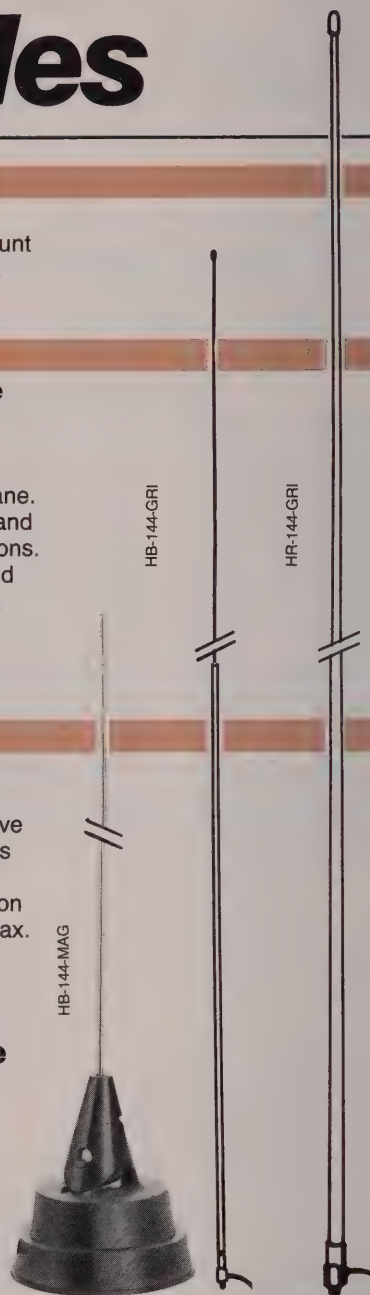
HB-144-GRI

Ground Independent for 2 meters

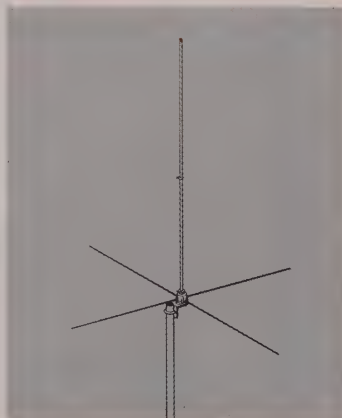
Same as the HR-144-GRI above except it has a white fiberglass bottom section with a 17-7 PH stainless steel tuneable whip on the top. Includes 2' (.61 m) coax.

ORDER NO. 285

Mobile Antennas are UPS Shippable.



GPG-2A



Collinear Ground Plane for 2 meters

This omnidirectional gain antenna for 2 meters is tuneable from 142 to 168 MHz. Delivers an omnidirectional gain of 3.4 dB.

ORDER NO. 338

Shipping Wt: 1 lbs. (.9 kg)

UPS Shippable

435 MHz • 145.9 MHz OSCAR Link Antenna

The OSCAR antenna is available as a complete system or as separate modules, each complete with the necessary phasing lines, relays and hardware. The complete system is carefully matched and balanced for superior performance.

The flexible design with switchable up/down link antennas is suitable for worldwide application. It includes left and right circularity switching to reduce fading (less than 3 dB ellipticity). Each antenna has high efficiency Delta matched driven elements. True RF switching relays are rated at 200 watts and improved VSWR for higher efficiency. Feed points are encapsulated and weather protected for long life. The crossboom, made of fiberglass, maintains the integrity of the circularity pattern and eliminates the interaction problems often found with metal booms. The MIL-spec coax balun comes with a Teflon dielectric and outer covering. Silver plated braid shield and center conductor assure durability and minimum attenuation.

The 70 cm antenna is based on 4.2 wavelength NBS design (NBS Tech Note 688). The 2 meter antenna has logarithmic element spacing for a high attenuation of side lobes.

For years of maintenance-free operation, the elements come with positive locking rings of stainless steel and UV stabilized insulators.

Mechanically the entire system or the separate antennas are well balanced, require only a small turning radius, and exert minimal stress on the elevation rotators.



Complete OSCAR Link Antenna System

ORDER NO. 218S

Shipping Wt. 17 lbs. (7.7 kg)
UPS Shippable

2 meter 145.9 MHz Antenna

ORDER NO. 216S

Shipping Wt. 8 lbs. (3.6 kg)
UPS Shippable

70 cm 435 MHz Antenna

ORDER NO. 215S

Shipping Wt. 6 lbs. (2.7 kg)
UPS Shippable

Heavy-Walled Fiberglass Crossboom

O.D. 1-3/8" (35 mm),
Length 60" (1.52 m)

ORDER NO. 217

Shipping Wt. 5 lbs. (2.3 kg)
UPS Shippable

Specifications

Mechanical	2 m Antenna	70 cm Antenna
Number of Elements	16	30
Boom Length	168.75" (429 mm)	134" (340 mm)
Boom O.D.	1.25" (32 mm)	1.125" (29 mm)
Mounting	Center	Center
Wind Surface Area	1.1 sq. ft. (.102 m ²)	.7 sq. ft. (.065 m ²)
Weight	7 lbs. (3.2 kg)	4 lbs. (1.8 kg)
Electrical		
Center Frequency	145.9 MHz	435 MHz
Band Width	144-148 MHz	432-438 MHz
Gain	11.5 dBd	14 dBd
Beam Width	40°	28°
Front-to-Back Ratio	25 dB	25 dB
Ellipticity	3 dB max.	3 dB max.
Power Rating	200 W PEP	200 W PEP
Polarity Switchable	Supplied	Supplied
Connector	UHF, SO-239	"N"

Antenna Towers

ORDER NO.	MODEL NO.	NUMBER OF SECTIONS	MATERIAL (ALL STEEL)	HEIGHT EXTENDED		HEIGHT RETRACTED		WIDTH AT BASE		WIND LOAD LIMIT @ 50 mph (80.5 km./hr.)		SHIPPING WT.	
				ft.	m.	ft.	m.	in.	mm.	sq. ft.	m ²	lbs.	kg.
125-1	HG-52SS	3	A500-A36 and A570	52	15.8	21	6.4	16.44	417.6	9.5	.8	455	206
129	HG-37SS	2	A500-A36 and A570	37	11.3	20.5	6.2	13.75	349.3	9.5	.8	265	120
130-1	HG-54HD	3	A500-A36 and A570	54	16.5	21.5	6.6	19.53	496.1	16*	1.5*	575	261
131-1	HG-70HD	4	A500-A36 and A570	70	21.3	21.5	6.6	22.63	574.7	16*	1.5*	1100	499

*These towers windload rated at 60 mph (96.6 km./hr.)

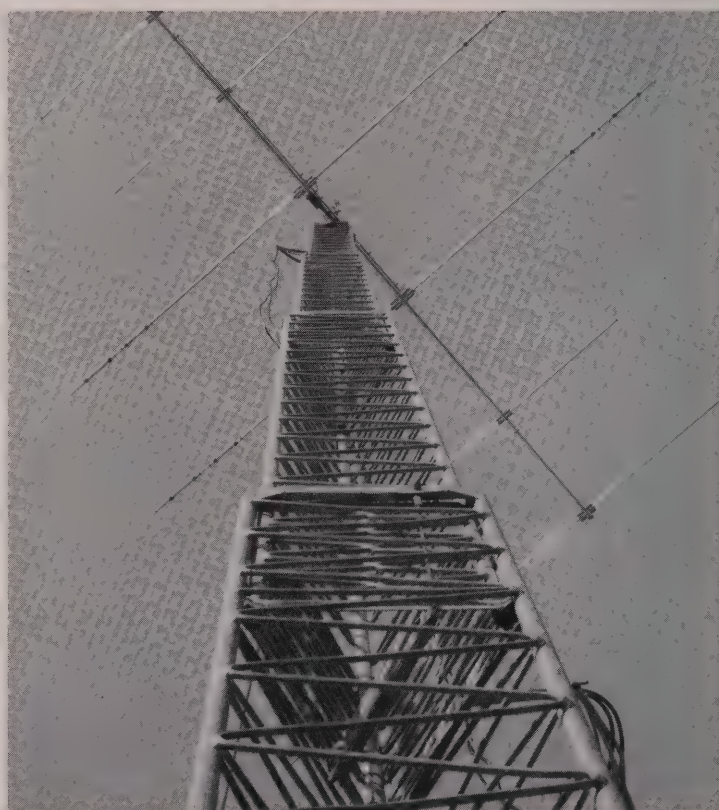
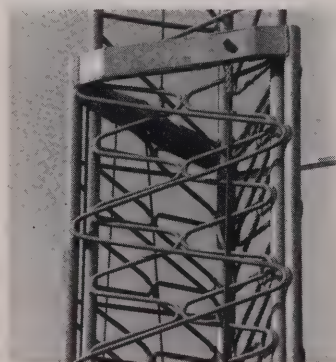
Self-Supporting Crank-Up Towers

Hy-Gain's rugged self-supporting crank-up towers are made of steel and are galvanized after welding to ASTM material standards. Open end tubular steel legs are galvanized inside and out and permit unrestricted moisture drainage. Giant welding fixtures assure straight and true alignment of the tower sections for close tolerance crank-up guide systems. These towers can be extended with a manual winch (included) or with an electric winch. A highly recommended option is the thrust bearing, which can be bolted

to the tower's top section to accept masts of up to 2 $\frac{3}{16}$ " (55 mm) diameter. All Hy-Gain towers are complete with base hinge, foundation steel-cage and a pre-drilled rotator mounting plate. These towers require no guying and conform to EIA specifications and the Uniform Building Code. They are also approved by the city of Los Angeles under Los Angeles fabrications license no. 1095. UBC documents for building permits are available on request (specify tower model) before purchasing a tower.

Diamond-Web Bracing means more strength where it's needed most

The "diamond web" or "double w" lattice brace configuration is used in Hy-Gain towers for added strength where the sections overlap. The diamond web design has 2 $\frac{1}{2}$ times the strength of the common "W" brace. When the tower is in its fully extended position, the wind load capacity is between 50 and 60 miles per hour (at its full rated load) depending on model.



TELEX®

hy-gain

4 SECTIONS

3 SECTIONS

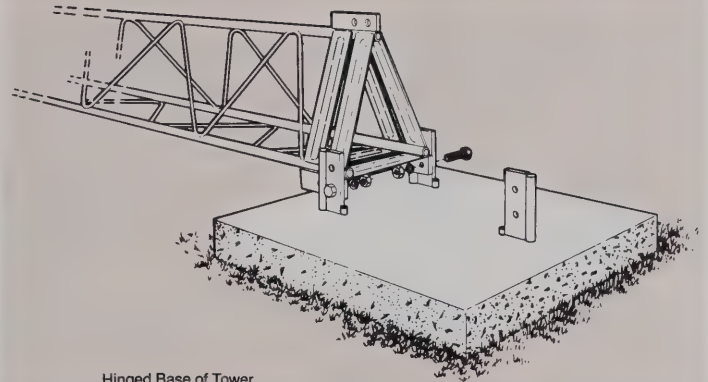
2 SECTIONS

HG-37SS
Recommended
Rotator:
HAM IV

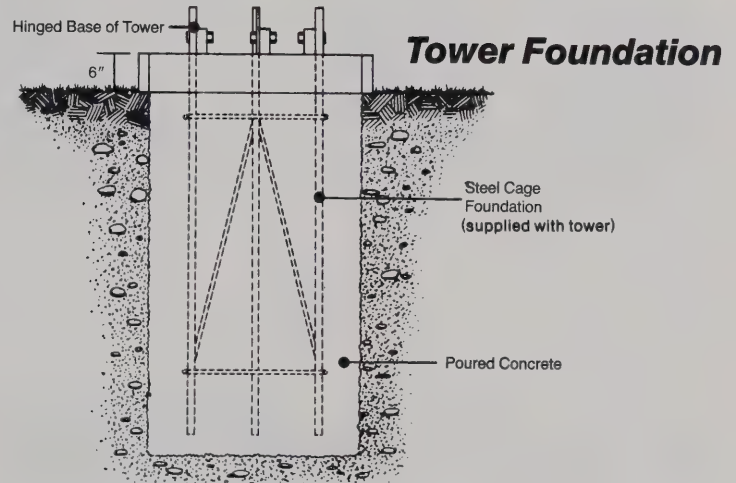
HG-52SS
Recommended Rotators:
HAM IV, HDR 300

HG-54HD
Recommended Rotators:
HAM IV, T²X, HDR 300

HG-70HD
Recommended Rotators:
HAM IV, T²X, HDR 300

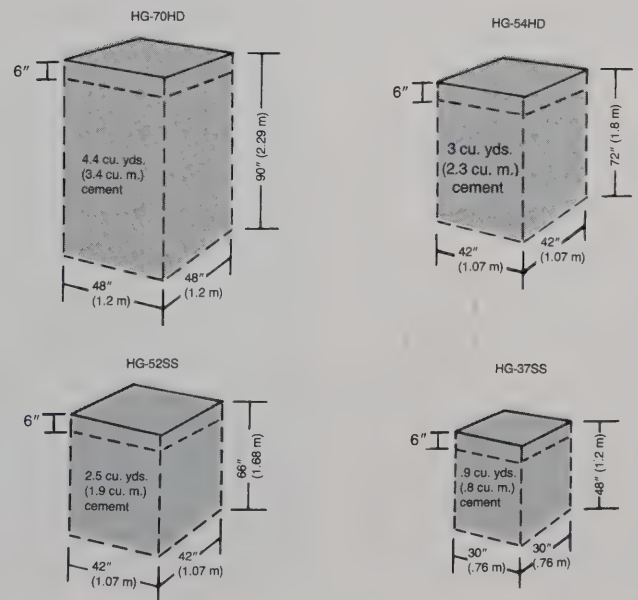


Hinged Base of Tower



Concrete Base Dimensions

Include 6" of concrete above ground.



Tower Accessories

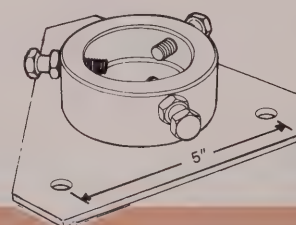
ORDER NO.	MODEL NO.	DESCRIPTION
116	HG-5	5' (1.52 m) mast*
117	HG-10	10' (3.05 m) mast*
118	HG-15	15' (4.57 m) mast*
121B	HG-TBT	Thrust bearing with sleeve
122	HG-COA	Coax arm for tower legs One required per section
140	HG-GP	Gin pole

*Masts 2" (50.8 mm) O.D. of 0.120" (3.05 mm) wall steel

Thrust Bearings

For use of masts up to $2\frac{3}{16}$ " (55 mm) diameter. Can be bolted to all Hy-Gain Crank-Up Towers. Easy installation with 3 bolts and lockwashers.

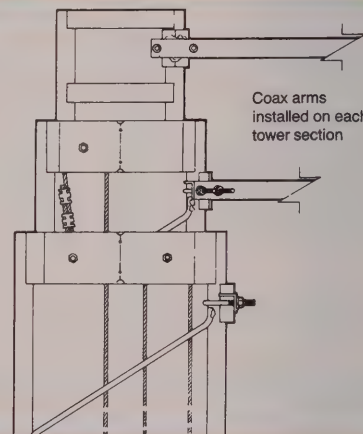
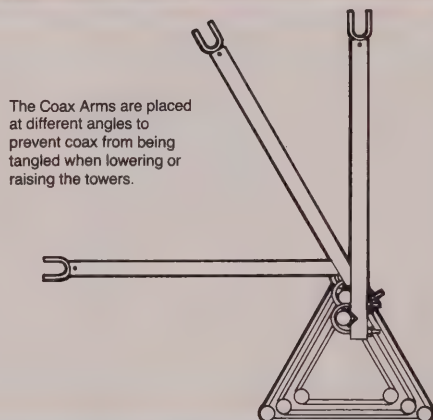
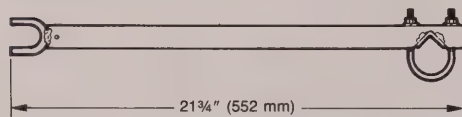
ORDER NO. 121B
BRONZE/OIL BEARING



Coax Arms

The coax arm is $21\frac{3}{4}$ " (552 mm) in length and can be easily attached to a range of tower leg sizes up to $1\frac{1}{2}$ " (38 mm) diameter. This arm will fit any Hy-Gain Crank-Up series tower as well as other towers.

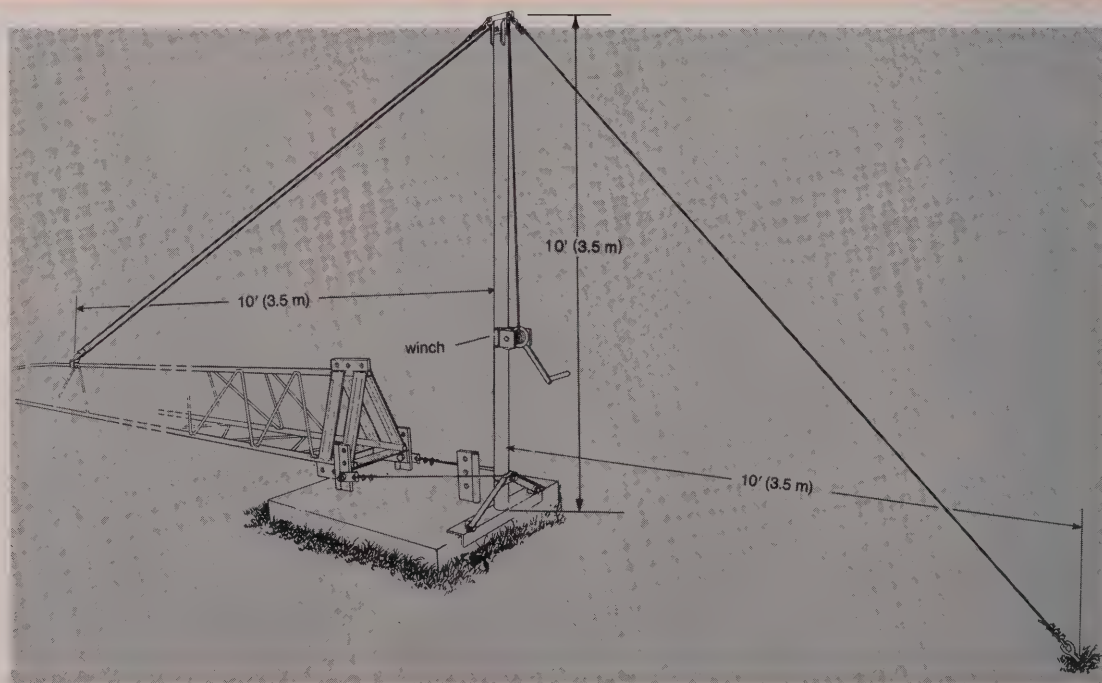
ORDER NO. 122



Gin Pole

The Gin Pole can be used on all Hy-Gain Crank-Up Series Towers. The bottom of the gin pole rests on the concrete base of the tower and is held in place by a cable attached to the tower base bolts. The top is guyed to a screw type earth anchor making it possible to raise and lower the tower with ease.

ORDER NO. 140



Antenna Rotators

Specifications

		ANTENNA WIND LOAD AREA CAPACITY (MOUNTED INSIDE TOWER)		ANTENNA WIND LOAD AREA CAPACITY (WITH LOWER MAST ADAPTOR)		MOTOR TURNING POWER-STALL TORQUE		BRAKE POWER AMOUNT OF TORQUE TO HOLD ANTENNA		BRAKE CONSTRUCTION	BEARING ASSEMBLY	MOUNTING HARDWARE	CONTROL CABLE REQUIRED	SHIPPING WT.	
ORDER NO.	MODEL NO.	sq. ft.	m²	sq. ft.	m²	in. lbs.	N•m	in. lbs.	N•m				Conduct- tors	lbs.	kg.
300	HDR 300	25	2.3	—	—	5000	565	7500	850	Solenoid Operated Locking Brake	Bronze Sleeve w/Roller Bearings Permanently Lubricated	Stainless Steel Bolts	7	55	25
303	T²X	20	1.9	10	—	1000	113	9000	1017	Electric Wedge	Triple Race 138 Ball Bearings	Clamp Plate; Stainless U-Bolts	8	28	12.7
304	HAM IV	15	1.4	7.5	—	800	90	5000	565	Electric Wedge	Dual Race 98 Ball Bearings	Clamp Plate; Stainless U-Bolts	8	24	11
302	CD45 II	8.5	.79	5.0	.46	600	68	800	90	Disc Brake	Dual Race 48 Ball Bearings	Plated Mast Clamps Stainless U-Bolts	8	22	10
305	AR 40	3.0	.28	1.5	.14	350	40	450	51	Disc Brake	Dual Race 12 Ball Bearings	Plated Mast Clamps Stainless U-Bolts	5	14	6.4
R3501	R3501	45	4.2	—	—	9000	1016	23000	2596	Chain Drive	Collar/Roller Bearing	½" Plated Hardware	7	330	150

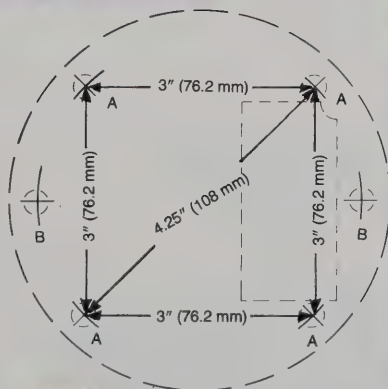
HF antennas with booms in excess of 26' (8 m) should use T²X, HDR300 or R3501

Template Bell-Housing Rotators

Clearance holes to be 1 1/32" (8.7 mm)

Use holes "A" for Models HAM IV, AR 40

Use holes "A & B" for Model T²X



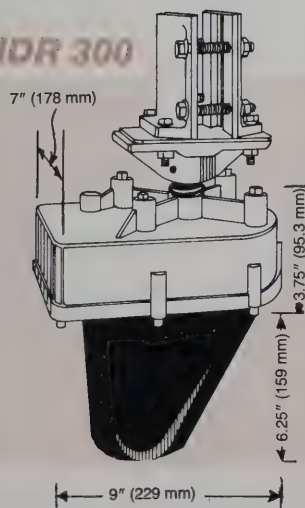
Lower Mast Support for HAM IV, T²X



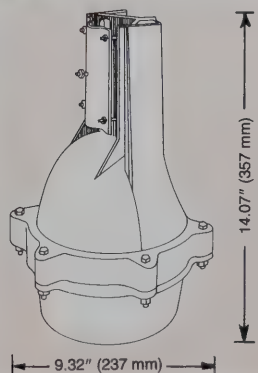
Accepts 1 7/8" to 2 5/8" O.D. pipe. Centers on 2 1/2"

ORDER NO. 5146710

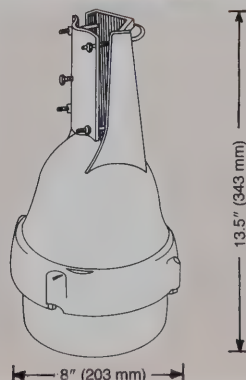
HDR 300



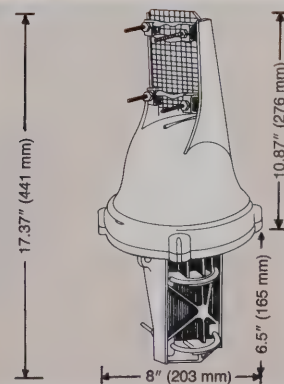
T²X



HAM IV



AR 40 and CD 45II

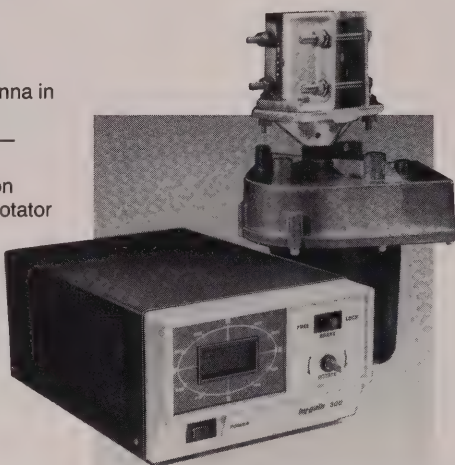


Antenna Rotators

HDR-300

This rotator is capable of handling king-sized antenna arrays of up to 25 sq. ft. (2.3 m²) wind load area.

- Thickwall Castings—handles largest loads
- Machined steel output gear
- Sleeve Bearings—permanently lubricated
- Superior, heavy duty steel clamps, self centering
- Solenoid Operated Locking Brake—securely locks antenna in place
- Digital Directional Indicator—accurate to 1°
- Separate Brake and Rotation Controls—provides longer rotator life
- Low Voltage Control—safe operation
- Maximum mast size 3" (76 mm)



ORDER NO. 300
(120/220 Vac 50/60 Hz)
Shipping Wt: 55 lbs. (25.0 kg)
UPS Shippable

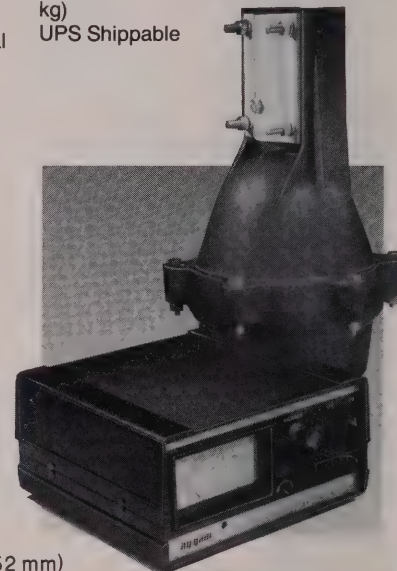
T-X Tailtwister

The world famous Tailtwister is capable of handling antennas with wind load areas of 20 sq. ft. (1.9 m²).

- Thickwall Castings—handles large loads
- 138 Ball Bearings—large load capacity
- Triple Bearing Race—exceptional lateral control
- Six-Bolt Assembly—superior strength
- Machined Steel Ring Gear—long life with maximum load
- Machined Steel Drive Gear System—time tested durability
- Electric Locking Wedge—securely locks antenna in place
- North or South Center Scale—marked on both sides of plate.
- Illuminated Directional Indicator—easily locates antenna
- Snap-Action Control Switches—lifetime operation
- L.E.D. Control Indicators—positive operational signals
- Zener Regulated Meter Circuit—accurate positional readout
- Low Voltage Control—safe operation
- Maximum mast size 2-1/16" (52 mm)

ORDER NO. 303
(120 Vac 60 Hz)

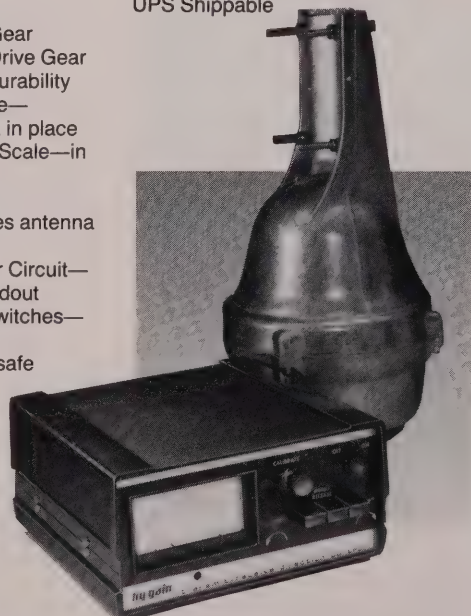
ORDER NO. 303-2
(220 Vac 50 Hz)
Shipping Wt. for either: 28 lbs. (12.7 kg)
UPS Shippable



FLAM IV

Designed for medium communications antenna array of up to 15 sq. ft. (1.4 m²) wind load area.

- Bell Rotator Design—total weather protection
- Dual 98 Ball Bearing Race—proven support system
- Machined Steel Ring Gear
- Machined Steel Ring Drive Gear System—time tested durability
- Electric Locking Wedge—securely locks antenna in place
- North or South Center Scale—in unit
- Illuminated Directional Indicator—easily locates antenna position
- Zener Regulated Meter Circuit—accurate positional readout
- Snap-Action Control Switches—lifetime operation
- Low Voltage Control—safe operation
- Maximum mast size 2-1/16" (52 mm)



ORDER NO. 304
(120 Vac/60 Hz)

ORDER NO. 304-2
(220 Vac/50 Hz)
Shipping Wt: 24 lbs. (11.0 kg)
UPS Shippable

TELEX®

hy-gain

CD 45II

Value packed with professional features. The CD45II will handle 8.5 sq. ft. (.79 m²) when mounted inside a tower, or 5 sq. ft. (.46 m²) when mast adaptor is used.

- Bell Rotator Design—total weather protection
- Dual 48 Ball Bearing Race—proven support system
- Diecast Ring Gear
- Stamped Steel Gear Drive System—heavy-duty, trouble-free gear train
- North or south center scale—in unit
- Illuminated Directional Indicator—easily locates antenna position
- Snap-Action Control Switches—lifetime operation
- Low Voltage Control—safe operation
- Maximum mast size 2-1/16" (52 mm)

ORDER NO. 302
(120 Vac/60 Hz)

ORDER NO. 302-2

(220 Vac/50 Hz)

Shipping Wt: 22.0 lbs. (10.0 kg)
UPS Shippable



AR40

For large FM-TV and compact communication antenna arrays up to 3.0 sq. ft. (.28 m²) wind load area.

- Dual 12 Ball Bearing Race—exclusive in its class
- Automatic Position Sensor—never needs resetting
- Fully Automatic Control—just dial and touch for any desired location
- Solid-State Control—silent operation
- Low Voltage Control—safe operation
- Maximum mast size 2-1/16" (52 mm)

ORDER NO. 305

(120 Vac/60 Hz)

ORDER NO. 305-2

(220 Vac/50 Hz)

Shipping Wt: 14 lbs. (6.4 kg)
UPS Shippable

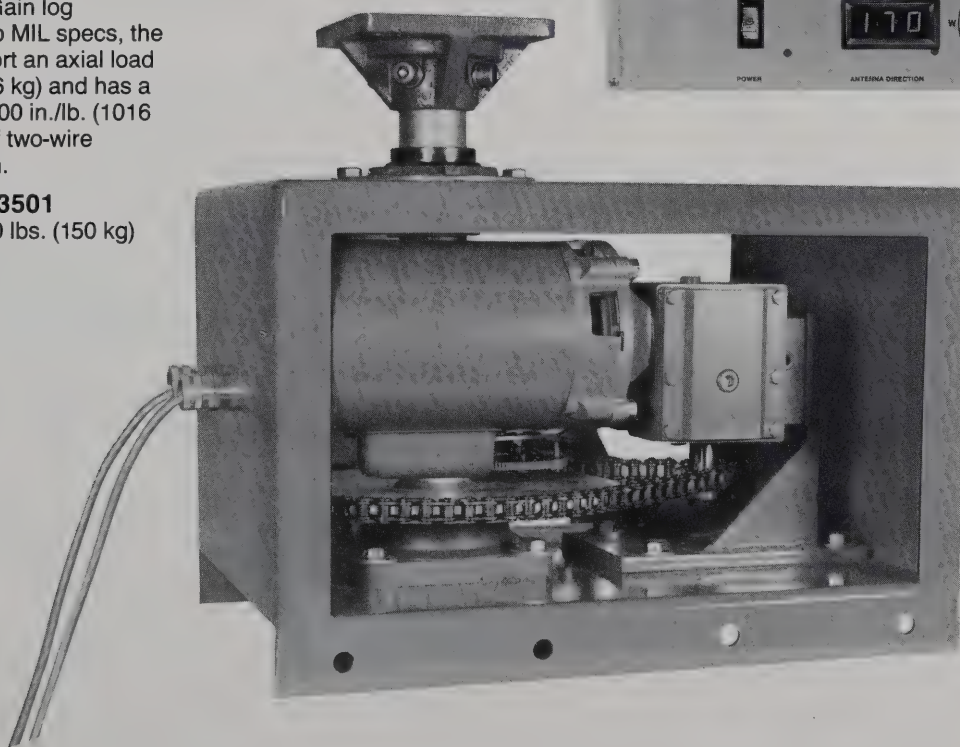


R3501

The R3501 is a universal rotator designed for heavy duty commercial antenna systems such as the Hy-Gain log periodics. Built to MIL specs, the R3501 will support an axial load of 1000 lb. (453.6 kg) and has a stall torque of 9000 in./lb. (1016 N•m) Capable of two-wire remote operation.

ORDER NO. R3501

Shipping Wt: 330 lbs. (150 kg)



a few of the Expeditions that rely on Hy-Gain...

MACAU ZONE 24 ASI
Greetings from
INTERNATIONAL DX FOUNDATION
DX-PEDITION
CR9
Operator: BILL HATCHER, KP4KX
QSO WITH: **TELEX hy gain** DATE: _____ GMT: _____ MHZ: _____
EQUIPMENT BY: **TELEX hy gain**
Denton BENCHER, INC. KLM

TRINIDAD AND TOBAGO ZONE 9 SOUTH AMERICA
Greetings from
INTERNATIONAL DX FOUNDATION
DX-PEDITION
9Y4JA
Operator: JOHN ACKLEY, KP2A
QSO WITH: **TELEX hy gain** DATE: _____ GMT: _____ MHZ: _____
EQUIPMENT BY: **TELEX hy gain**
Denton BENCHER, INC. KLM QSL Manager: SCOTT

DOMINICA ZONE 8 NORTH AMERICA
Greetings from
INTERNATIONAL DX FOUNDATION
DX-PEDITION
KP2A/J7T
Operator: _____
QSO WITH: **TELEX hy gain** DATE: _____ GMT: _____ MHZ: _____
EQUIPMENT BY: **TELEX hy gain**
Denton BENCHER, INC. KLM

BRUNEI ZONE 28
Greetings from
INTERNATIONAL DX FOUNDATION
DX-PEDITION
VS5
Operator: N200 (VS300), N2CW (VS300), KP2A (VS300)
QSO WITH: **TELEX hy gain** DATE: _____ GMT: _____ MHZ: _____
EQUIPMENT BY: **TELEX hy gain**
Denton BENCHER, INC. KLM

ANGUILLA ZONE 8 NORTH AMERICA
Greetings from
INTERNATIONAL DX FOUNDATION
DX-PEDITION
VP2EA
Operator: JOHN ACKLEY, KP2A
QSO WITH: **TELEX hy gain** DATE: _____ GMT: _____ MHZ: _____
EQUIPMENT BY: **TELEX hy gain**
Denton BENCHER, INC. KLM QSL Manager: FRED CRUGIER, KB4GB 9675 Woodmont Place Orlando, FL 32811

DESECHEO ZONE 8 NORTH AMERICA
Greetings from
INTERNATIONAL DX FOUNDATION
DX-PEDITION
KP2A
Operator: _____
QSO WITH: **TELEX hy gain** DATE: _____ GMT: _____ MHZ: _____
EQUIPMENT BY: **TELEX hy gain**
Denton BENCHER, INC. KLM

MALAGASY DEMOCRATIC REPUBLIC ZONE 39
Greetings from
INTERNATIONAL DX FOUNDATION
DX-PEDITION
5R8AL
Operator: _____
QSO WITH: **TELEX hy gain** DATE: _____ GMT: _____ MHZ: _____
EQUIPMENT BY: **TELEX hy gain**
Denton BENCHER, INC. KLM

ST. PETER & ST. PAUL ROCKS ZONE 11 SOUTH AMERICA
Greetings from
INTERNATIONAL DX FOUNDATION
DX-PEDITION
PY0ZSB
Operator: _____
QSO WITH: **TELEX hy gain** DATE: _____ GMT: _____ MHZ: _____
EQUIPMENT BY: **TELEX hy gain**
Denton BENCHER, INC. KLM

The Virgin Islands of the United States ZONE 8 NORTH AMERICA
Greetings from
INTERNATIONAL DX FOUNDATION
DX-PEDITION
KP2
Operator: _____
QSO WITH: **TELEX hy gain** DATE: _____ GMT: _____ MHZ: _____
EQUIPMENT BY: **TELEX hy gain**
Denton BENCHER, INC. KLM

ASCENSION ISLAND ZONE 28 OCEANIA
Greetings from
INTERNATIONAL DX FOUNDATION
DX-PEDITION
ZD8
Operator: _____
QSO WITH: **TELEX hy gain** DATE: _____ GMT: _____ MHZ: _____
EQUIPMENT BY: **TELEX hy gain**
Denton BENCHER, INC. KLM

EAST MALAYSIA ZONE 28 OCEANIA
Greetings from
INTERNATIONAL DX FOUNDATION
DX-PEDITION
9M6MU
Operator: N200, N2CW, VS3TX, KP2A
QSO WITH: **TELEX hy gain** DATE: _____ GMT: _____ MHZ: _____
EQUIPMENT BY: **TELEX hy gain**
Denton BENCHER, INC. KLM

TELEX®

hy-gain



a few of the Hams that rely on Hy-Gain...

"DX-ers dream come true..." "It was as though the world opened up." **KX6DS** — using a TH7DX
Kwajalein Atoll

"Great antenna..." **A71AD** — using a TH7DX
Qatar

"I have the best signal from the Islands... Beats the competition..." **S79WHW** — using a TH7DX
Seychelles, Indian Ocean

"Appreciation for the quality of Hy-Gain antennas... Cape Town experienced the highest ever recorded gale force winds." **ZS1ZQ**
South Africa

"Fine products... engineering and quality control I have found to be nothing short of excellent..." **KQ3U**
U.S.A.

"First antennas on the air in Peoples Republic of China" **VE7BC** — using a TH7DX at BY1PK
Canada

"...complete satisfaction... The materials used in construction of this antenna are first rate." "I would not hesitate to recommend it to anyone."
VE4AHP — using a 18AVT
Canada

"I was first Polish station to reach DXCC Honor Roll... obtained by using the 14AVQ...on 14 MHz I worked 93 DXCC countries in 40 hours of operation."
SP7HT — using a 14AVQ
Poland

"Three thousand contacts in a few months... and growing." **5R8AL** — using an Explorer 14
Madagascar

TELEX®

hy-gain

TELEX COMMUNICATIONS, INC.

2100 Arden Avenue South
Minneapolis, MN 55420 U.S.A.

Intelsat 5670045

Facsimile 612-884-0043

Telephone:

Customer Service 800-328-3711

in Minnesota 612-887-5530

Antenna and Related:

Parts Orders Telex Hy-Gain

8501 M.E. Hwy. D

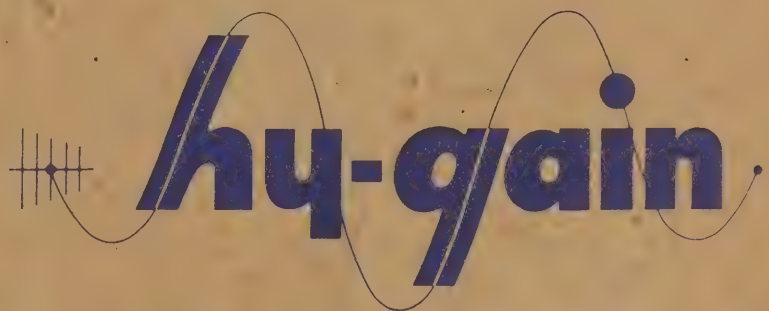
Lincoln, NE 68509

Telephone 402-467-5321

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Instruction Manual

FOR



COMMUNICATION ARRAYS

designed and manufactured by
 antenna
products

1135 NO. 22ND • LINCOLN NEBRASKA

"World's Largest Manufacturer of Amateur Communication Antennas!"

For Coupling Energy Into Space... Anywhere in the Radio Spectrum

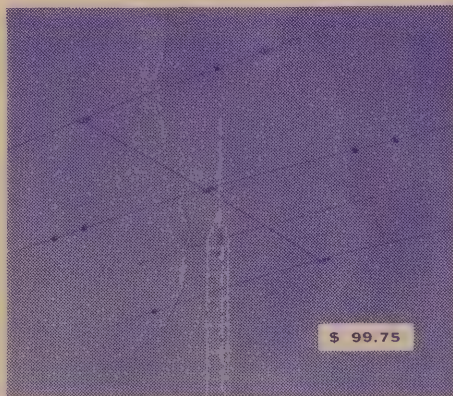
hy-gain HAS THE ANTENNA!

the hy-gain Multi-band trap antennas

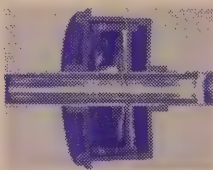
The Full Size Trap Tribanders

There are more hy-gain Trap Tribanders in use than all other 3-band beams combined. Incorporate the startling Insu-Trap which effectively isolates various sections of the beams with its automatic switch action. New precalibrated Triaxial Gamma Match Systems afford 1:1 SWR. Rugged construction throughout.

2-Element Tribander	\$ 69.50
3-Element Standard	\$ 99.75
5-Element Champion	\$395.00



\$ 99.75



Mechanically & electrically stable, the Insu-Trap is enclosed in completely weatherproof polyethylene cover. Hi-Q coils. No air dielectric



Triaxial Gamma Match System with coaxially formed reactance cancelling capacitor built-in makes possible 1:1 SWR. Precalibrated.

The Trap Verticals

Using the Insu-Traps, these Verticals also feature the nylon base assembly for self-support. Use Capacity Hat principle to increase radiating efficiency. Less than 2:1 SWR on all bands. Single 52 ohm feed line.

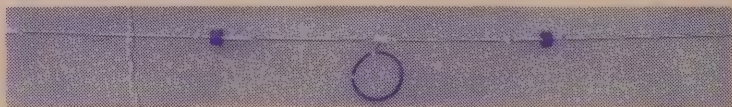
26-AV (for 2 & 6M)	\$16.95
12-AV (for 10, 15 & 20M)	19.95
14-AV (for 10-40M)	27.95
18-AV (for 10-80M)	69.50
12-AV Mount Kit	8.95
14-AV Mount Kit	9.95



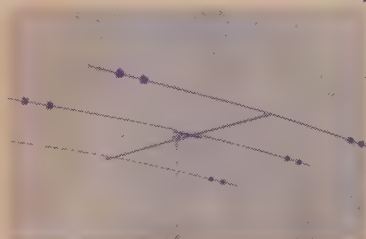
\$27.95

4 & 5-Band Doublets

Hi-Q Insu-Trap circuits used with pressure clamp ends; — Insu-Traps for 10-80M, traps only, per pair, \$12.50. Insu-Traps for 10-40M, traps only, per pair, \$12.50. 4-Band Doublet Kit (less traps) for use with traps, \$14.00. 5-Band Doublet Kit (less traps) for use with traps, \$15.00.



The Mini-Tribanders

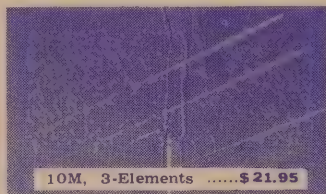


Here's the smallest practical size consistent with efficient operation, to which the famous Trap Tribanders can be reduced. Allows installation in the smallest city lots. Light weight; easily rotated by most TV rotators. Factory pre-tuned, with dimensions given for assembly in a matter of minutes. The 3-Element Mini-Tribander weighs only 39.8 lbs.; turning radius of 13'10". The 2-Element weighs 33.8 lbs.; turning radius of 12'11". Both incorporate specially designed, lightweight efficient, completely weatherproof Insu-Traps, and Split Insulated Dipole Feed.

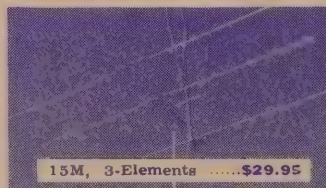
2-Element Mini-Tribander	\$49.95
3-Element Mini-Tribander	\$69.95

The Monobanders

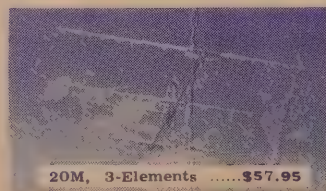
Perfect 1:1 SWR with the new Gammamaxial Gamma Match System, precalibrated. All beams pre-tuned and pre-matched, complete with easy-to-follow instructions. Large diameter elements with ruggedly-built Boom/Mast clamps.



10M, 3-Elements\$21.95



15M, 3-Elements\$29.95

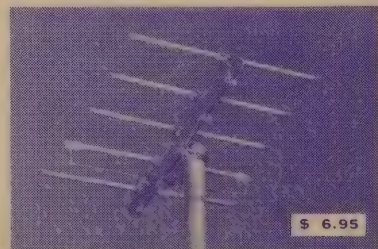


20M, 3-Elements\$57.95

The VHF Beams

Here are antennas for the VHF bands of 1 1/4, 2 and 6M. Sturdy construction throughout. Additional gain available through stacking. New Gammamaxial Gamma Match System makes possible perfect 1:1 SWR.

6M, 5-Element	\$12.95
6M, 8-Element	\$24.95
2M, 5-Element	\$ 6.95
1 1/4M, 10-Element	\$ 9.95
2M, 10-Element	\$10.95



\$ 6.95



\$10.95

Model No. **152MT-3**Serial No. 00018

QUANTITY

NOTE

Retain this warranty card for possible future reference. The attached card must be filled in completely and mailed, within 10 days, to Hy-Gain Antenna Products Co., in order to validate warranty. Warranty will not be honored unless attached card is registered in our files at time of purchase.

GUARANTEE ON REVERSE SIDE

~~ASSEMBLIES~~
K 7/8" ALUMINUM TUBING CLAMP
ASSEMBLIES

2 DRIVEN ELEMENT

A 1" X .058 ALUMINUM TUBE 72"
B 10 METER INSU-TRAPS
C 1" X .058 ALUMINUM TUBE 13 3/4
D 15 METER INSU TRAPS
E 3/4 X .025 ALUMINUM TUBE 21 1/4
F BOOM TO DRIVEN ELEMENT
BRACKET
G 1/4" X 1 1/2" U BOLTS
A 1/4" LOCK WASHERS
B 1/4"-20 NUTS
H 1/4" X 1 1/8 U BOLTS
A 1/4" LOCK WASHERS
B 1/4"-20 NUTS
J 1" ID X 1 1/8 OD POLYETHYLENE
INSULATOR
K 1" TUBING CLAMP ASSEMBLIES
L 7/8 TUBING CLAMP ASSEMBLIES

3 REFLECTOR

A 1" X .058 ALUMINUM TUBING 144
B 10 METER INSU-TRAP
C 1" X .058 ALUMINUM TUBING 13 3/4
D 15 METER INSU-TRAP
E 3/4 X .025 ALUMINUM TUBING 21 1/4
F ELEMENT TO BOOM BRACKET
G 1/4" X 1 1/2" U BOLTS
H 1/4" X 1 U BOLTS
(1) 1/4" LOCK WASHERS
(2) 1/4"-20 NUTS
I 1" TUBING CLAMPS ASSEMBLIES
J 7/8 TUBING CLAMP ASSEMBLIES

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For Coupling Energy Into Space... Anywhere in the Radio Spectrum

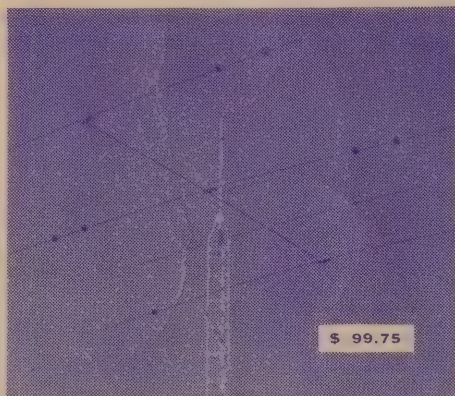
hy-gain HAS THE ANTENNA!

the hy-gain Multi-band trap antennas

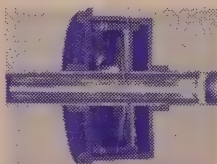
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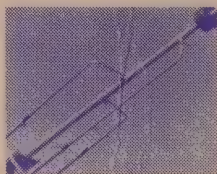
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5-Element Champion	\$395.00



\$ 99.75



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Triaxial Gamma Match System with coaxially formed reactance cancelling capacitor built-in makes possible 1:1 SWR. Precalibrated.

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Using the Insu-Traps, these Verticals also feature the nylon base assembly for self-support. Use Capacity Hat principle to increase radiating efficiency. Less than 2:1 SWR on all bands. Single 52 ohm feed line.

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12-AV (for 10, 15 & 20M)	19.95
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18-AV (for 10-80M)	69.50
12-AV Mount Kit	8.95
14-AV Mount Kit	9.95

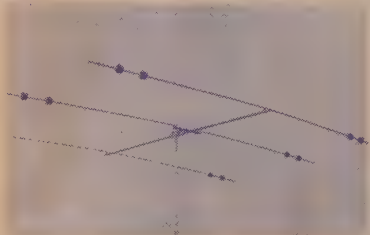
4 & 5-Band Doublets

Hi-Q Insu-Trap circuits used with pressure clamp ends; — Insu-Traps for 10-80M, traps only, per pair, \$12.50. Insu-Traps for 10-40M, traps only, per pair, \$12.50. 4-Band Doublet Kit (less traps) for use with traps, \$14.00. 5-Band Doublet Kit (less traps) for use with traps, \$15.00.



\$27.95

The Mini-Tribanders

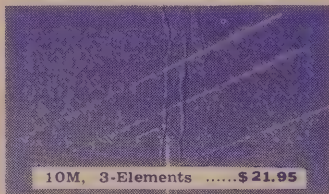


Here's the smallest practical size constant with efficient operation, to which the famous Trap Tribanders can be reduced. Allows installation in the smallest city lots. Light weight; easily rotated by most TV rotators. Factory pre-tuned, with dimensions given for assembly in a matter of minutes. The 3-Element Mini-Tribander weighs only 39.8 lbs.; turning radius of 13'10". The 2-Element weighs 33.8 lbs.; turning radius of 12'11". Both incorporate specially designed, lightweight efficient, completely weatherproof Insu-Traps, and Split Insulated Dipole Feed.

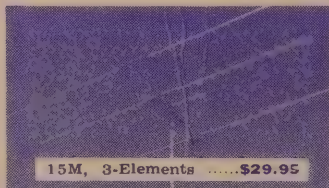
2-Element Mini-Tribander	\$49.95
3-Element Mini-Tribander	\$69.95

The Monobanders

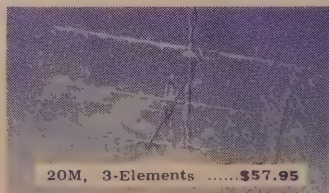
Perfect 1:1 SWR with the new Gammamaxial Gamma Match System, precalibrated. All beams pre-tuned and pre-matched, complete with easy-to-follow instructions. Large diameter elements with ruggedly-built Boom/Mast clamps.



10M, 3-Elements\$21.95



15M, 3-Elements\$29.95

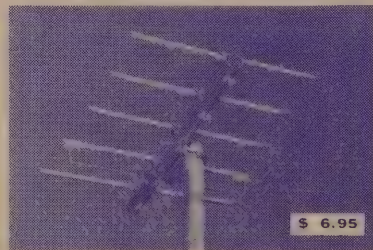


20M, 3-Elements\$57.95

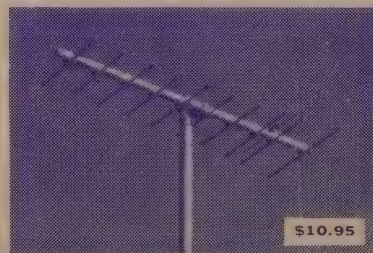
The VHF Beams

Here are antennas for the VHF bands of 1 1/4, 2 and 6M. Sturdy construction throughout. Additional gain available through stacking. New Gammamaxial Gamma Match System makes possible perfect 1:1 SWR.

6M, 5-Element	\$12.95
6M, 8-Element	\$24.95
2M, 5-Element	\$ 6.95
1 1/4M, 10-Element	\$ 9.95
2M, 10-Element	\$10.95



\$ 6.95



\$10.95

Model No. **152MT-3**

Serial No. **2018**

NOTE

Retain this warranty card for possible future reference. The attached card must be filled in completely and mailed, within 10 days, to Hy-Gain Antenna Products Co., in order to validate warranty. Warranty will not be honored unless attached card is registered in our files at time of purchase.

GUARANTEE ON REVERSE SIDE

GUARANTEE

Hy-Gain Antenna Products Company guarantees each new product manufactured by it to be free from defective material and workmanship and agrees to remedy any such defective parts or to furnish a new part in exchange for any part of its manufacture which under normal installation, use and service discloses such defect, provided the unit is delivered by the owner to us intact, for our examination, with all transportation charges prepaid to our factory, within one year from the date of sale to original purchaser and provided that such examination discloses in our judgment that it is thus defective.

This guarantee does not extend to any of our products which have been subjected to misuse, neglect, accident, incorrect installation, or to use in violation of instructions furnished by us, nor extends to units which have been repaired or altered outside of our factory, nor to accessories used therewith not of our own manufacture.

Any part of a unit approved for remedy or exchange hereunder will be remedied or exchanged without charge to the owner.

This guarantee is in lieu of all other guarantees expressed or implied and no other representative or person is authorized to assume for us any other liability in connection with the sale of our products.

I DIRECTOR		LENGTH	QUANTITY
A	1" x .058 ALUMINUM TUBE	144"	1
B	10 METER INSU-TRAP		2
C	1" x .058 ALUMINUM TUBE	13 3/4"	2
D	15 METER INSU-TRAP		2
E	3/4 x .025 ALUMINUM TUBE	21 1/4"	2
F	BOOM TO ELEMENT CLAMP		1
G	1/4" x 1 1/2" U BOLTS		2
A	1/4" LOCK WASHERS		4
B	1/4"-20 NUTS		4
H	1/4" x 1" U BOLTS		2
A	1/4" LOCK WASHERS		4
B	1/4"-20 NUTS		4
J	1" ALUMINUM TUBING CLAMP ASSEMBLIES		6
K	7/8" ALUMINUM TUBING CLAMP ASSEMBLIES		2

2 DRIVEN ELEMENT

A	1" x .058 ALUMINUM TUBE	72"	2
B	10 METER INSU-TRAPS		2
C	1" x .058 ALUMINUM TUBE	13 3/4"	2
D	15 METER INSU TRAPS		2
E	3/4 x .025 ALUMINUM TUBE	21 1/4"	2
F	BOOM TO DRIVEN ELEMENT BRACKET		1
G	1/4" x 1 1/2" U BOLTS		2
A	1/4" LOCK WASHERS		4
B	1/4"-20 NUTS		4
H	1/4" x 1 1/8 U BOLTS		4
A	1/4" LOCK WASHERS		8
B	1/4"-20 NUTS		8
J	1" ID x 1 1/8 OD POLYETHYLENE INSULATOR		4
K	1" TUBING CLAMP ASSEMBLIES		6
L	7/8 TUBING CLAMP ASSEMBLIES		2

3 REFLECTOR

A	1" x .058 ALUMINUM TUBING	144"	1
B	10 METER INSU-TRAP		2
C	1" x .058 ALUMINUM TUBING	13 3/4"	2
D	15 METER INSU-TRAP		2
E	3/4 x .025 ALUMINUM TUBING	21 1/4"	2
F	ELEMENT TO BOOM BRACKET		1
G	1/4 x 1 1/2" U BOLTS		2
H	1/4 x 1 U BOLTS		2
(1)	1/4" LOCK WASHERS		4
(2)	1/4"-20 NUTS		4
I	1" TUBING CLAMPS ASSEMBLIES		6
J	7/8 TUBING CLAMP ASSEMBLIES		2

MATERIAL LIST FOR I52MT-3 CONTINUED

LENGTH QUANTITY

4 BOOM

- A $1\frac{1}{2}$ x 12' STEEL BOOM
- B BOOM TO MAST BRACKET
- C $5/16$ x $1\frac{1}{2}$ U BOLTS
- A $5/16$ " LOCK WASHERS
- B $5/16$ NUTS

~~1~~
~~4~~
~~8~~
~~8~~

5

- I OZ. JAR ELECTROSEAL
- I OZ. JAR NEOPRENE

IN THE CASE OF SHORTAGES, CHECK OFF THE MISSING PARTS AND
SEND THIS SHEET TO:

DEPARTMENT S
HY-GAIN ANTENNA PRODUCTS
1135 NORTH 22ND STREET
LINCOLN, NEBRASKA

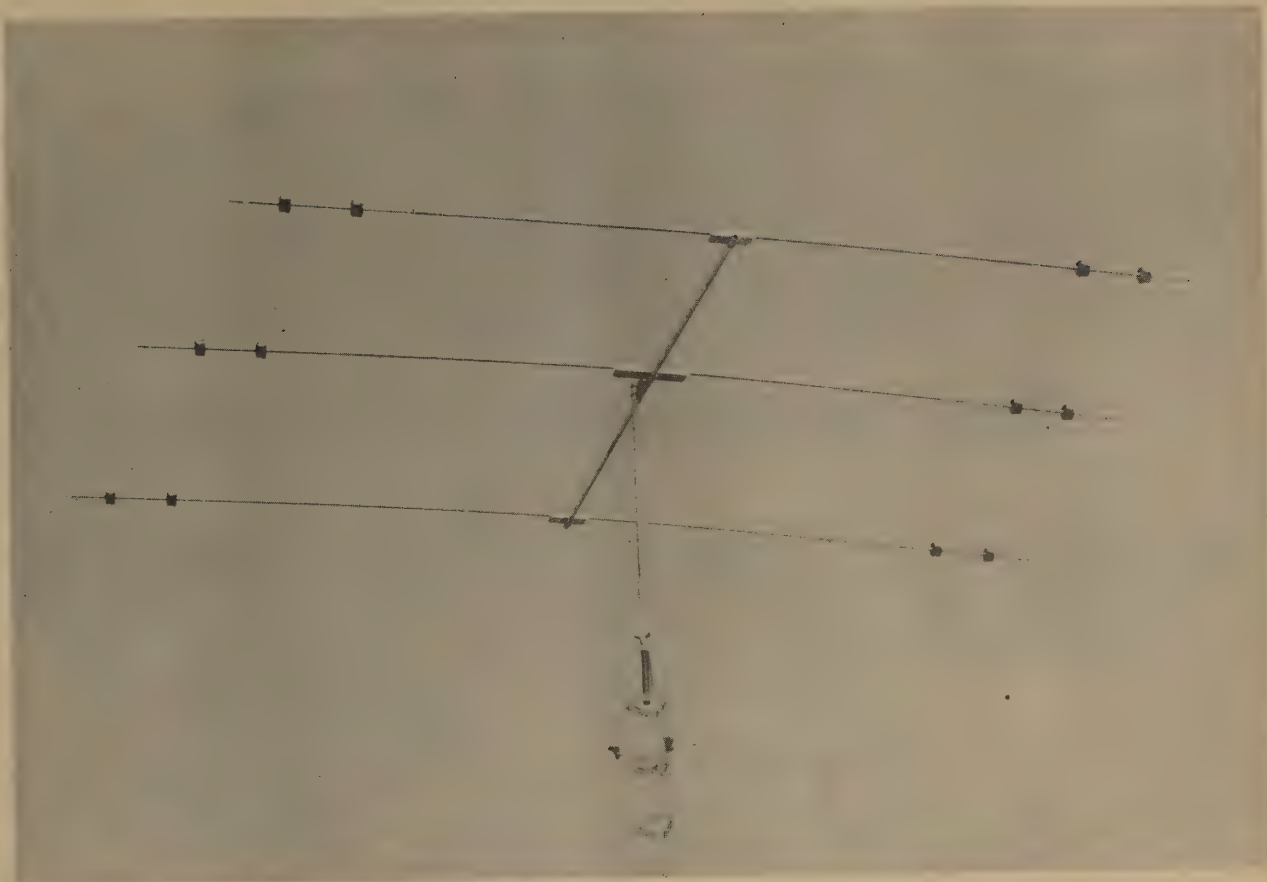


FIG. 1

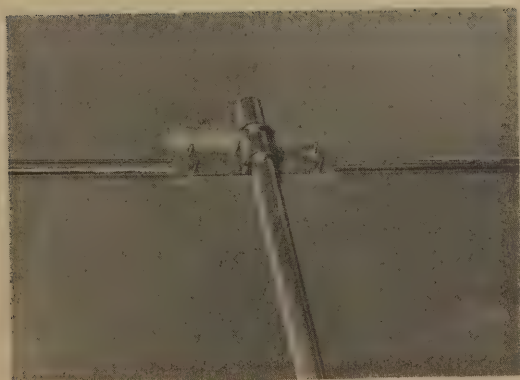


FIG. 2

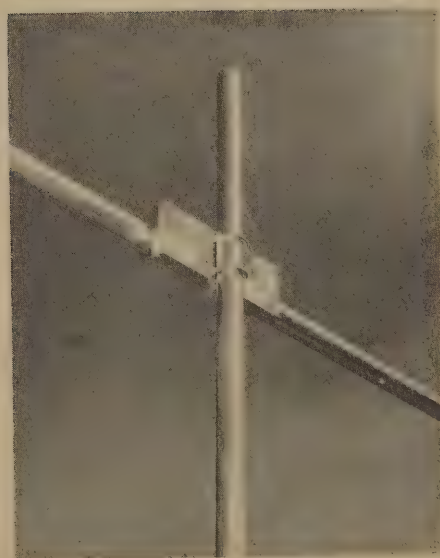


FIG. 3

ASSEMBLY INSTRUCTIONS MODEL I52MT-3

A. PREPARATORY

THE TWO PAGES B AND F SHOULD BE THOROUGHLY STUDIED BEFORE YOU BEGIN THE ASSEMBLY. PAGE B SHOWS THE ANTENNA FULLY ASSEMBLYED, ALSO A PERSPECTIVE VIEW OF ELEMENT TO BOOM CLAMP. PAGE F SHOWS MAKE UP OF REFLECTOR, DIRECTOR AND DRIVEN ELEMENT WITH PART NUMBERS AND DIMENSIONS FOR CW AND PHONE SETTINGS.

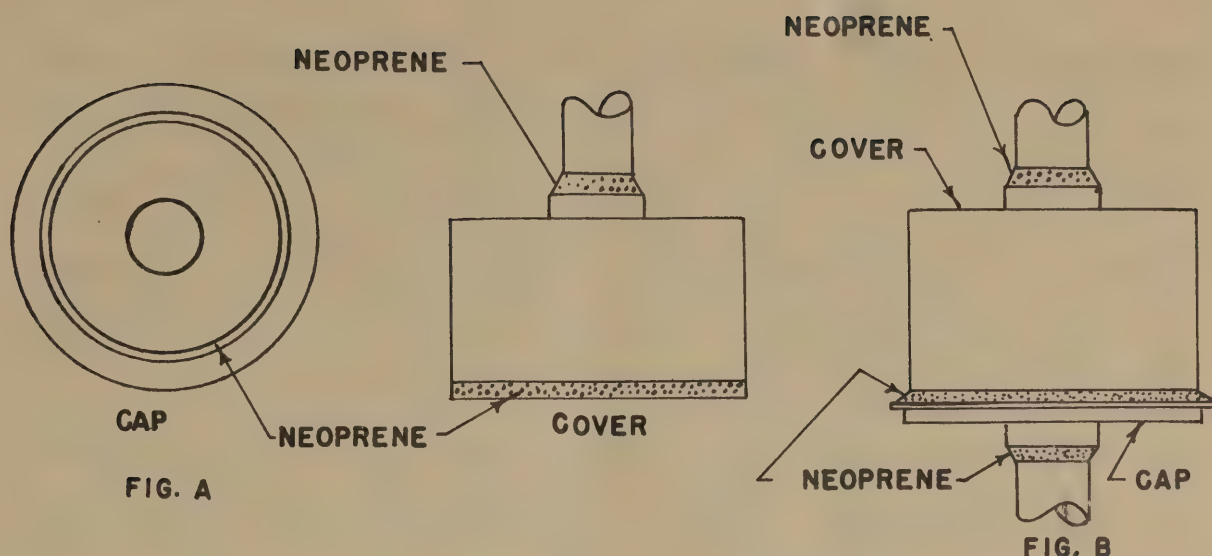
BEFORE ASSEMBLY BEGINS ALL PARTS SHOULD BE CHECKED AGAINST THE CHECK SHEET. WHEN ASSEMBLING, KEEP ALL TELESCOPING SECTIONS FREE FROM DIRT AND GRIT.

SUPPLIED WITH THE ANTENNA IS A TUBE OF ELECTROSEAL. THIS IS A SPECIALLY COMPOUNDED MATERIAL WHICH IS AN OXIDATION INHIBITOR AND INCREASES ELECTRICAL CONDUCTIVITY. IT SHOULD BE APPLIED ON ALL TELESCOPING SECTIONS AND OTHER PARTS WHERE AN ELECTRICAL CONNECTION IS MADE.

WEATHER SEALING INSU-TRAP COILS

THE FOLLOWING STEPS SHOULD BE FOLLOWED IN SEALING THE COVERS TO INSURE TROUBLE FREE OPERATION.

1. REMOVE THE COVER CAP (FIG.A) AND INSERT A SMALL AMOUNT OF NEOPRENE AROUND THE RECESSED SEALING EDGE OF THE CAP (FIG.A).
2. A SMALL AMOUNT OF NEOPRENE SHOULD THEN BE APPLIED TO THE LEADING EDGE OF THE COVER (FIG.A).
3. INSERT CAP OVER 7/8" TUBING AND SEAT TIGHTLY.
4. APPLY A FILM OF NEOPRENE OVER THE SEALED JOINT, BEING SURE TO COVER THE ENTIRE LIP ON THE CAP COVER (SHOWN IN FIG. B).
5. A BEAD OF NEOPRENE SHOULD ALSO BE APPLIED AROUND THE SEAL ON BACK AND FRONT COVER WHERE IT CONTACTS THE 7/8" TUBING (SEE FIGURE 3).
6. ALLOW THE NEOPRENE TO DRY FOR FOUR HOURS OR OVERNIGHT AND INSPECT THE SEALS FOR ANY MINUTE HOLES CAUSED BY AIR TRAPPED BY THE NEOPRENE. THESE MINUTE HOLES (IF ANY) SHOULD NOW BE COVERED WITH ANOTHER LIGHT COAT OF NEOPRENE. THE INSU-TRAPS ARE NOW READY TO BE MOUNTED IN THE ANTENNA.



THE THREE ELEMENT MINI-TRIBANDER SHOULD BE ASSEMBLED IN THE FOLLOWING STEPS:

1. ASSEMBLE MAST BRACKET ON BOOM
2. ASSEMBLE DRIVEN ELEMENT
3. ASSEMBLE REFLECTOR AND DIRECTOR
4. MOUNT ELEMENTS ON BOOM

I. THE BOOM TO MAST ASSEMBLY IS AS FOLLOWS:

REFER TO FIGURE #3 PAGE B TO FAMILIARIZE YOURSELF WITH THE PARTS AND THEIR RELATIONSHIP. SLIP THE TWO 5/16" U BOLTS AROUND THE 1 1/2" OD TUBING THROUGH THE CORRESPONDING HOLES IN THE HEAVY STEEL GALVANIZED BRACKET AND SECURE WITH A 5/16" NUT. BE SURE THAT THE FLANGE EDGES ARE IN AN OUTWARD POSITION AWAY FROM THE BOOM. THIS BRACKET SHOULD BE MOUNTED ON THE BOOM EQUAL DISTANCE BETWEEN THE REFLECTOR AND DIRECTOR. SLIP TWO OF THE 5/16" U BOLTS THROUGH THE BRACKET FROM THE FLANGE SIDE AND SECURE THEM LOOSELY IN POSITION UNTIL THE BOOM IS MOUNTED UPON THE MAST.

2. THE DRIVEN ELEMENT ASSEMBLY IS AS FOLLOWS:

ALL PARTS RELATED TO THE DRIVEN ELEMENT ASSEMBLY ARE BUNDLED TOGETHER AND MARKED WITH PRINTED TAPE. REFER TO FIGURE #2 PAGE F TO FAMILIARIZE YOURSELF WITH THE INDIVIDUAL PARTS. SELECT THE TWO 1" OD x 72" LONG SECTIONS MARKED 4A. SELECT THE TWO POLYETHYLENE TUBES MARKED 2J IN FIGURE #2 AND INSERT THEM OVER THE 1" TUBING AND ADJUST TO CORRESPOND TO THE PROPER HOLES IN THE BRACKET (2F). THESE POLYETHYLENE TUBES ARE INSERTED OVER THE END OF THE TUBING WHICH IS NOT SLOTTED. THE OTHER 1" x U2" SECTION IS PREPARED IN THE SAME MANNER. THESE TWO SECTIONS MAY BE MOUNTED ON THE BRACKET (2F) AND SECURED WITH THE 1 1/4" U BOLTS (2H). THESE U BOLTS MOUNT OVER THE POLYETHYLENE PARTS (2J) SO AS TO INSULATE THE DRIVEN ELEMENT AWAY FROM

THE BRACKET (2F). THERE SHOULD BE A 3" SPACING BETWEEN THE ENDS OF THESE TWO SECTIONS AT THE CENTER GIVING THE OVERALL DIMENSIONS (A) OF 147". INSERT INTO THE OUTER EDGE OF THE 1" TUBING A 10 METER TRAP (2B) WHICH IS MARKED WITH PRINTED TAPE FOR EASY IDENTIFICATION. IT SHOULD BE NOTED THAT THE INSU-TRAPS ARE MOUNTED WITH REMOVABLE CAPS IN THE INSIDE POSITION AS SHOWN IN FIGURE #2. SECURE THESE TRAPS WITH A 1" TUBING CLAMP (2K). INSERT THE 1" TUBING (2C) ON TO THE OUTER END OF THE INSU-TRAP (2B) AND SECURE WITH THE 1" TUBING CLAMP (2K). INSERT THE 15 METER INSU-TRAP (2D) INTO THE 1" SLEEVE WITH THE REMOVABLE CAP IN THE INWARD POSITION AND SECURE WITH THE 1" TUBING CLAMP (2K). INSERT THE 3/4" TUBING (2E) INTO THE OUTER EDGE OF THE 15 METER INSU-TRAP AND SECURE WITH THE 7/8" TUBING CLAMP (2F). BOTH SIDES OF THE DRIVEN ELEMENT ARE ASSEMBLED IN THE SAME MANNER.

FOR FINAL ADJUSTMENT OF THE SECTIONS ON THE DRIVEN ELEMENT REFER TO PAGE G. ON PAGE G IS GIVEN THE SECTION LENGTHS FOR BOTH PHONE AND CW OPERATION. THESE DIMENSIONS CORRESPOND TO THE FIGURE #2 OF PAGE F. AFTER THESE ADJUSTMENTS ARE MADE TIGHTEN ALL TUBING CLAMPS AND RECHECK THE OVERALL LENGTH OF THE ELEMENT -- THIS SHOULD CORRESPOND TO THE DIMENSIONS GIVEN ON PAGE G.

3. THE ASSEMBLY OF THE DIRECTOR AND REFLECTOR ELEMENTS ARE AS FOLLOWS:

ALL SECTIONS PERTAINING TO THE REFLECTOR OR DIRECTOR ARE BUNDLED TOGETHER AND DESIGNATED AS SUCH. SELECT THE CENTER SECTION (1A) WHICH IS 1" OD X 12" LONG TUBING AND ASSEMBLE THE CENTER ELEMENT TO BOOM BRACKET (F). THIS BRACKET WILL MOUNT EXACTLY IN THE CENTER OF THE 1" TUBING AND BE SECURED BY TWO 1/4" U BOLTS AS SHOWN IN FIGURE #3. THE OUTER SECTIONS ARE ASSEMBLED IN THE SAME MANNER AS THE DRIVEN ELEMENT ABOVE AND THE CORRESPONDING DIMENSIONS FOR PHONE OR CW OPERATIONS MAY BE FOUND ON PAGE G.

4. THE MOUNTING OF THE ELEMENTS TO THE BOOM IS AS FOLLOWS:

THE BOOM IS MARKED, FOR PLACEMENT OF THE ELEMENTS WITH A PIECE OF PRINTED TAPE. THE ELEMENTS SHOULD BE CENTERED OVER THESE MARKS. THEY ARE SECURED IN THIS POSITION WITH THE U BOLTS (G). THE BOOM SHOULD BE ATTACHED TO THE MAST AS SHOWN IN FIGURE #2 PAGE B.

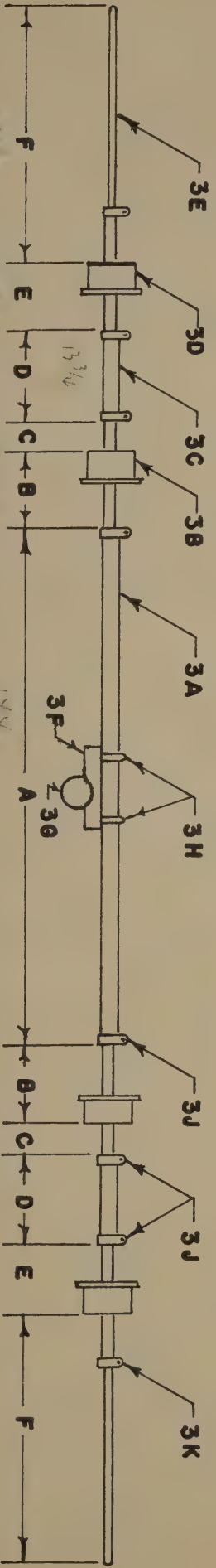
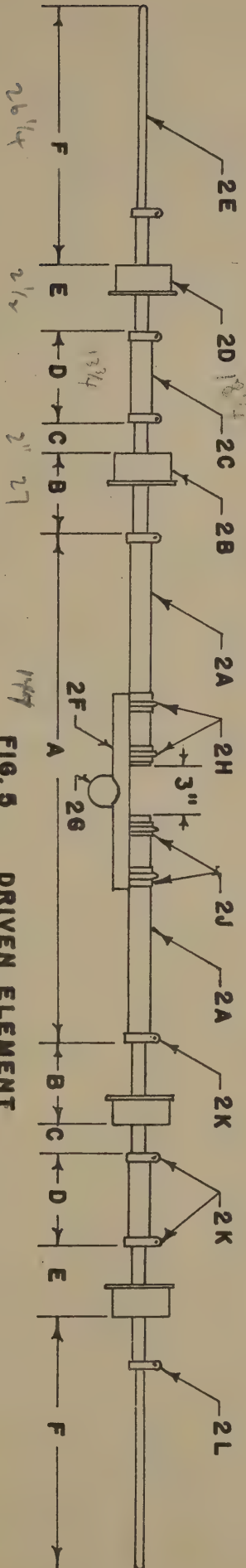
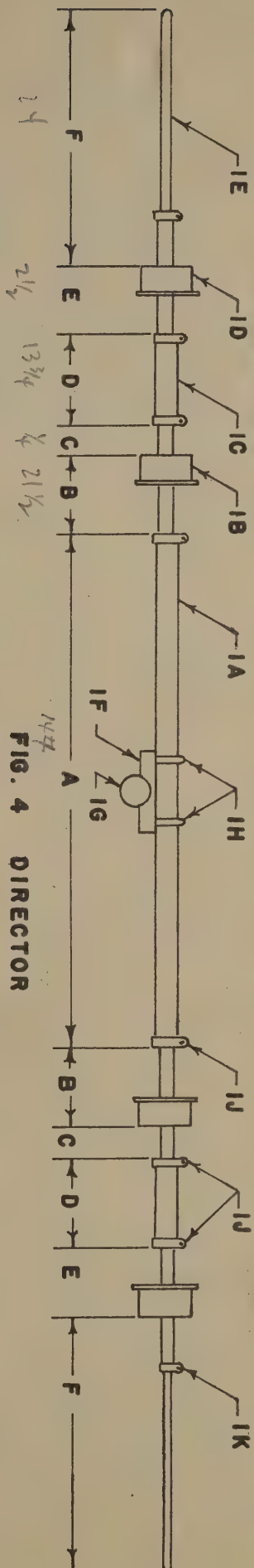


TABLE OF DIMENSIONS FOR PHONE AND CW OPERATION THESE DIMENSIONS ARE ALL IN INCHES
AND CORRESPOND TO THE FIGURE INDICATED

PHONE	A	B	C	D	E	F	OVERALL
DIRECTOR FIG 4. PAGE #	I44	21 $\frac{1}{2}$ "	$\frac{1}{4}$ "	I3 3/4"	2 $\frac{1}{2}$ "	24"	268"
DRIVEN ELEMENT FIG 5. PAGE E	I47"	27"	2"	I3 3/4"	2 $\frac{1}{2}$ "	26 $\frac{1}{4}$ "	293 $\frac{1}{8}$ "
REFLECTOR FIGURE 6 PAGE E	I44"	34 $\frac{1}{2}$ "	2 $\frac{1}{2}$ "	I3 3/4"	4 3/4"	28 $\frac{1}{2}$ "	312"
CW OPERATION	A	B	C	D	E	F	OVERALL
DIRECTOR FIG 4 PAGE E	I44"	35 $\frac{1}{2}$ "	$\frac{1}{4}$ "	I3 3/4"	2 $\frac{1}{2}$ "	27"	282
DRIVEN ELEMENT FIG 5 PAGE E	I47"	32"	2 $\frac{1}{2}$ "	I3 3/4"	4 $\frac{1}{4}$ "	26"	304
REFLECTOR FIG 6 PAGE E	I44"	36"	2 $\frac{1}{2}$ "	I3 3/4"	4 $\frac{1}{2}$ "	29"	315 $\frac{1}{2}$ "

INSTRUCTION MANUAL FOR THE MINI-TRIBANDER

I. GENERAL INSTALLATION CONSIDERATION - TRI-BANDER SERIES

A. MOUNTING

THE IMPORTANCE OF A SAFE, STRONG, SUPPORTING STRUCTURE FOR YOUR ANTENNA SYSTEM CANNOT BE OVER EMPHASIZED. IN GENERAL, SELF SUPPORTING STEEL TOWERS AND SELF SUPPORTING TELEPHONE POLES ARE THE MOST DESIREABLE TYPE OF SUPPORT. THE TYPE AND DEPTH OF THE GROUND MOUNTS ARE OF COURSE, DEPENDANT UPON SOIL CONDITIONS AT YOUR PARTICULAR LOCALITY. STEEL TOWERS, POLES, AND MAST MAY BE USED IF THE GUY WIRES ARE BROKEN UP WITH INSULATORS, IN ORDER TO AVOID GUY WIRE RESONANCE. HOUSE MOUNTED ANTENNA SUPPORT STRUCTURES ARE TO BE AVOIDED BUT WHEN USED THEY SHOULD BE VERY CAREFULLY DESIGNED AND TAKING INTO CONSIDERATION THE STRUCTURAL CHARACTERISTICS OF YOUR HOUSE OR BUILDING.

THE DETRIMENTAL EFFECT OF SURROUNDING OBJECTS IS OFTEN UNDER ESTIMATED IN THE AVERAGE ANTENNA INSTALLATION. EXTENSIVE EXPERIMENTATION AT OUR ANTENNA RANGE HAS POINTED OUT THE FACT THAT THESE EFFECTS CAN BE VERY SERIOUS AND THE PROBLEM OF GETTING THE ANTENNA IN THE CLEAR FROM SURROUNDING OBJECTS IS A VERY IMPORTANT ONE. IT SHOULD BE POINTED OUT IN PARTICULAR THAT POWER LINES AND OTHER METAL OBJECTS OF CONSIDERABLE MASS OR LENGTHS WILL DETERRIATE THE PERFORMANCE OF ANY ANTENNA. IT IS THEREFORE HIGHLY RECOMMENDED THAT ONE OF THE FIRST CONSIDERATIONS OF ANY ANTENNA INSTALLATION BE THE POSITIONING OF THE ARRAY AS FAR AWAY AS POSSIBLE FROM SURROUNDING OBJECTS. IN THIS RESPECT, A LITTLE ADDITIONAL TRANSMISSION LINE WITH THE ACCOMPANYING TRANSMISSION LOSSES IS VERY MUCH PREFERRED OVER THE CLOSE PROXIMITY OF SURROUNDING OBJECTS.

ALL HY-GAIN COMMUNICATION ANTENNAS ARE DESIGNED TO FIT A $1\frac{1}{2}$ INCH O.D. MAST. A $1\frac{1}{4}$ INCH I.D. STEEL, GALVANIZED, PLUMBERS PIPE (WHICH IS $1\frac{1}{2}$ INCH O.D.) IS RECOMMENDED FOR MAST USE. IT IS STRONG AND ALSO LOW IN COST. A SPECIAL BOOM TO MAST CLAMP (SMC-2) IS AVAILABLE FOR 2 INCH O.D. MAST. PRICE IS \$3.95.

B. HEIGHT

IN GENERAL, ANY ANTENNA SYSTEM OPERATING ABOVE 14 MC IN FREQUENCY SHOULD BE AT LEAST 40 FEET ABOVE GROUND. IF MOUNTED ON A HOUSE OR BUILDING THE ANTENNA SHOULD BE AT LEAST 20 FEET ABOVE THE ROOF. THIS IS A MINIMUM HEIGHT FOR GOOD OPERATION. BELOW 40 FEET BOTH THE RESONANCE AND THE IMPEDANCE OF THE DIPOLE MAY VARY CONSIDERABLY. THIS

WILL IN SOME CASES NECESSITATE DIPOLE LENGTH ADJUSTMENTS AND MATCHING ADJUSTMENTS. ADDITIONAL HEIGHT IF IT CAN BE ACHIEVED SAFELY, WILL INCREASE THE PERFORMANCE OF THE ARRAY AND GREATLY REDUCE QSB PROBLEMS. THE POINT OF DEMINISHING RETURNS IS USUALLY REACHED AT THE HEIGHT OF ABOUT 90 FEET AND STRUCTURES ABOVE THIS HEIGHT ARE VERY DIFFICULT AND COSTLY TO INSTALL IN A SAFE MANNER.

C. LIGHTNING AND WEATHER PROTECTION

YOUR ANTENNA INSTALLATION MAY BE ADEQUATELY PROTECTED IF YOU PROPERLY GROUND THE BASE OF THE TOWER AND MAST WHICH SUPPORTS YOUR ANTENNA. A PROPER GROUND CONSISTS OF #8 OR LARGER, COPPER OR ALUMINUM WIRE, RUNNING DIRECTLY AND BY THE SHORTEST PATH, TO A $\frac{1}{2}$ INCH, BY 8 FOOT COPPER CLAD STEEL GROUND ROD DRIVEN INTO THE EARTH. ALL OTHER GROUND FOR EXAMPLE, WATER PIPES, VENT PIPES, SHOULD BE AVOIDED. THE CHASSIS OF YOUR TRANSMITTER SHOULD ALSO BE GROUNDED WITH A SIMILAR GROUNDING SYSTEM. ALL HY-GAIN ANTENNA SYSTEMS ARE SUPPLIED WITH TWO WEATHER PROTECTING SUBSTANCES, ELECTROSEAL AND LIQUID NEOPRENE.

THE ELECTROSEAL IS AN ANTI-CORROSIVE COMPOUND WHICH CONTAINS FINE GRANULATED ZINC PARTICLES. WHEN APPLIED TO THE INSIDE TELESCOPING SURFACES OF YOUR ELEMENT SECTION, IT RESISTS CORROSION AND THE ZINC PARTICLES, PIERCE SURFACE OXIDATION LAYERS TO FORM A GOOD LONG LASTING ELECTRICAL CONNECTION. ELECTROSEAL IS AVAILABLE FROM YOUR HY-GAIN DISTRIBUTOR AT \$.39 PER OUNCE.

LIQUID NEOPRENE IS USED TO WEATHERSEAL THE INSU-TRAP COVERS, AS POINTED OUT IN ANOTHER PART OF THIS MANUAL. IN CERTAIN HEAVILY SALT LADEN ATMOSPHERES, IT MAY BE DESIRABLE TO COAT THE ENTIRE ANTENNA WITH LIQUID NEOPRENE. LIQUID NEOPRENE IS AVAILABLE ALSO FROM YOUR HY-GAIN DISTRIBUTOR AT \$1.95 PER HALF PINT.

D. STACKING

IT IS NOT RECOMMENDED THAT ANY ANTENNAS WHICH ARE RESONANT BELOW 30 MEGACYCLES BE STACKED OR MOUNTED NEAR THE TRI-BANDER. THIS INCLUDES DOUBLETS AND VERTICALS AS WELL AS BEAMS.

VHF BEAMS (ON 50 MC OR HIGHER) WHEN MOUNTED AT LEAST 8 FEET AWAY FROM THE TRI-BANDER, WILL NOT SERIOUSLY EFFECT ITS OPERATION.

E. ROTATORS

THE HY-GAIN GRAP MINI-TRIBANDERS MAY BE ROTATED BY A HEAVY DUTY T.V. ROTATOR IN WINDS UP TO 40 OR 50 MPH. IN HIGH WIND AREAS THE HY-GAIN ROTO BRAKE IS RECOMMENDED.

II. INSTALLATION INSTRUCTIONS

A. DESCRIPTION

THE HY-GAIN TRAP REDUCED SIZE MINI-TRIBANDER COMMUNICATIONS ARRAY ARE DESIGNED FOR 3 BAND OPERATION WITH A SINGLE FEED LINE ON 10, 15 AND 20 METERS. THE MODEL I52MT-2 OPERATES AS AN INDEPENDENT 2 ELEMENT ARRAY ON EACH OF THESE 3 BANDS. THE MODEL I52MT-3 OPERATES AS AN INDEPENDENT 3 ELEMENT ARRAY ON EACH OF THESE 3 BANDS. EXTREMELY EFFECTIVE ISOLATION BETWEEN THE VARIOUS SECTIONS OF THE ELEMENTS IS ACCOMPLISHED THROUGH THE USE OF PARALLEL RESONANT TRAP CIRCUITS. THESE PARALLEL RESONANT TRAPS ACT AS INSULATORS AT OTHER FREQUENCIES TO PASS FREELY.

B. MECHANICAL SPECIFICATIONS

	<u>I52MT-2</u>	<u>I52MT-3</u>
BOOM LENGTH	6'	12'
BOOM MATERIAL (HOT DIPPED)	GALVANIZED	GALVANIZED
BOOM OUTSIDE DIAMETER	1 $\frac{1}{2}$ "	1 $\frac{1}{2}$ "
LONGEST ELEMENT	26'3" CW 25'6" PH	26' 3' CW 25'6" PH
ELEMENT DIAMETERS	1" TO 3/4"	1" TO 3/4"
ELEMENT MATERIAL (ALUM)	6061T-6	6061T-6
NET WEIGHT	28 LBS	39 LBS
TURNING RADIUS	13' 4"	14' 4"
WIND SURFACE (SQ. FT.)	2.7 SQ. FT.	4.27 SQ. FT.
WIND LOAD AREA (100 MPH - LBS.)	83.7	133

C. ELECTRICAL SPECIFICATIONS

	<u>10M-15M-20M</u>	<u>10M-15M-20M</u>
GAIN IN DB OVER $\frac{1}{2}$ WAVE DIPOLE	** ** *	** ** *
FRONT TO BACK RATIO IN DB	*12 20	*15 25
STANDING WAVE RATIO (RESONANCE)	1.1:1	1.1:1
MAXIMUM POWER INPUT (P.E.P.)	2 KW	2 KW
MAXIMUM POWER INPUT (AM)	1 KW	1 KW

****THE HY-GAIN MINI-TRIBANDER WAS TUNED FOR THE MAXIMUM POSSIBLE GAIN FOR A REDUCED SIZE ANTENNA ARRAY.**

***FRONT TO BACK RATIO WILL VARY CONSIDERABLY WITH HEIGHT ABOVE GROUND AT A PROXIMITY OF SURROUNDING OBJECTS. FRONT TO BACK RATIO IS ALSO DEPENDENT UPON THE ARRIVAL ANGLE OF THE RADIO FREQUENCY WAVE FRONT. MAXIMUM FRONT TO BACK RATIO IS MAINTAINED OVER ONLY A VERY NARROW BAND OF FREQUENCIES APPROXIMATELY EQUIVALENT TO PLUS OR MINUS $\frac{1}{2}$ OF 1% OF THE OPERATING FREQUENCY.**

THE ABOVE SWR READINGS WERE TAKEN AT OUR TEST SITE WITH THE ANTENNAS MOUNTED 40 FEET ABOVE GROUND. AN SWR OF 2 TO 1 OR LESS, IS GUARANTEED ON ALL 3 BANDS IF THE ANTENNA IS AT LEAST 40 FEET HIGH AND RELATIVELY IN THE CLEAR OF SURROUNDING OBJECTS.

D. LENGTH & SPACINGS

THE ELEMENT LENGTH AND SPACINGS ARE VERY CAREFULLY EXPERIMENTALLY DERIVED AT OUR ANTENNA TEST RANGE. THESE LENGTHS AND SPACINGS ARE IN ANOTHER PART OF THIS MANUAL FOR EITHER PHONE OR CW OPERATION. GIVEN FOR PHONE OPERATION THE ANTENNA WAS PEAKED FOR MAXIMUM PERFORMANCE AT 14.250 KC, 21.350 KC AND 28.750 KC. FOR CW OPERATION THE ANTENNA WAS PEAKED FOR MAXIMUM PERFORMANCE AT 14.100 KC, 21.125 KC AND 28.250 KC. THE ANTENNA WILL WORK REASONABLY WELL OVER THE ENTIRE BANDS NO MATTER WHICH SETTING IS CHOSEN. IT WILL HOWEVER, FAVOR PHONE OR CW (IN ACCORDANCE WITH THE WAY IT IS SET) WITH SOMEWHAT BETTER GAIN FRONT TO BACK AND SWR. IT IS RECOMMENDED THAT NO ATTEMPT BE MADE TO ADJUST THE PARASITIC REFLECTOR AND/OR DIRECTOR. THE ANTENNA IS GUARANTEED TO PERFORM WITHIN 10% OF ITS ELECTRICAL SPECIFICATIONS IF MOUNTED AT LEAST 40 FEET HIGH AND RELATIVELY IN THE CLEAR OF SURROUNDING OBJECTS. THE DRIVEN ELEMENT MAY BE ADJUSTED SLIGHTLY TO COMPENSATE FOR CERTAIN VARIABLES ENCOUNTERED AT EACH INSTALLATION SITE. THE ADJUSTMENT OF THE DRIVEN ELEMENT TO REDUCE THE SWR AT THE OPERATING FREQUENCY IS COVERED IN ANOTHER SECTION OF THIS MANUAL.

E. THE TRAPS

THE PARALLEL RESONANT TRAP ASSEMBLIES ARE INDIVIDUALLY RESONATED AT THE FACTORY. THEY ARE SET ON ONE FREQUENCY AND THE ADJUSTMENT BETWEEN PHONE AND CW IS ACCOMPLISHED BY ADJUSTING THE TUBING LENGTHS AS COVERED ON PAGES C & D OF THIS MANUAL. (BE VERY CAREFUL TO WEATHERSEAL THE POLYETHYLENE TRAP COVERS WITH LIQUID NEOPRENE AS OUTLINED ON PAGE C.)

F. THE SPLIT DIPOLE MATCHING SYSTEM

THE HY-GAIN 3 BAND MINI-TRIBANDERS ARE FURNISHED WITH A SPLIT DIPOLE WHICH HAS BEEN EXPERIMENTALLY SPACED SO AS TO GIVE A TERMINAL IMP OF VERY NEARLY 52 OHMS. THIS DIPOLE SYSTEM IS FED DIRECTLY WITH 52 OHMS RG-8U COAXIAL CABLE. SIMPLY STRIP THE CENTER CONDUCTOR AND THE SHIELD OF COAXIAL CABLE BACK ABOUT 2 INCHES, ATTACH THESE TWO LUGS TO THE TERMINAL BOLTS PROVIDED AT THE DRIVEN ELEMENT FEED POINT. (BE SURE TO SEAL THE EXPOSED END OF THE COAXIAL CABLE TO PREVENT MOISTURE FROM GETTING INSIDE OF THE PLASTIC COVERING. THE LINE RADIATION OR ANTENNA EFFECT CAUSED BY FEEDING THE BALANCED DIPOLE WITH THE UNBALANCED TRANSMISSION LINE, CAN BE MINIMIZED BY WINDING THE COAXIAL CABLE INTO A BUNDLE OF COIL TO FORM A COAXIAL CHOKE AS FOLLOWS:

AT A POINT AS CLOSE TO THE DRIVEN ELEMENT AS POSSIBLE WIND THE COAXIAL CABLE TO A BUNDLE OF 12 TURNS 5 INCHES IN DIAMETER. THESE TURNS SHOULD BE TAPED TOGETHER SECURELY AND THE ENTIRE BUNDLE OR COIL TAPED SECURELY TO THE STEEL BOOM. THIS COAXIAL CHAKE WILL REQUIRE APPROXIMATELY 20 FEET OF ADDITIONAL FEED LINE.

G. TRANSMISSION LINES

THE HY-GAIN TRAP MINI-TRIBANDER ANTENNA IS DESIGNED FOR USE WITH 52 OHM COAXIAL TRANSMISSION LINE ONLY. THERE ARE THREE TYPES OF 52 OHM COAXIAL LINES COMMERCIALY AVAILABLE. THE RG58U MAY BE USED WHERE LINE RUNS ARE SHORT AND POWER LEVELS DO NOT EXCEED 100 WATTS. RG8U IS HIGHLY RECOMMENDED SINCE IT IS RELATIVELY LOW LOSS CHARACTERISTICS AND WILL HANDLE ONE KW OF RF POWER. RGI7U ALTHOUGH RATHER EXPENSIVE, RESULTS IN LOWER TRANSMISSION LOSSES AND IS ESPECIALLY RECOMMENDED IF YOUR LINE RUNS ARE EXTRA LONG AND/OR POWER LEVELS ARE EXTREMELY HIGH.

CONTINUATION CHART
TYPE OF LINE

CONTINUATION PER 100
FT-VSWR 1.0:1

<u>COAXIAL CABLE 52 OHM</u>	<u>14Mc</u>	<u>21Mc</u>	<u>30Mc</u>	<u>VEL- OCITY FACTOR</u>
RG-58U	1.6	1.9	2.3	.66
RG-8U	.69	.85	1.0	.66
RG-17U	.24	.32	.41	.66

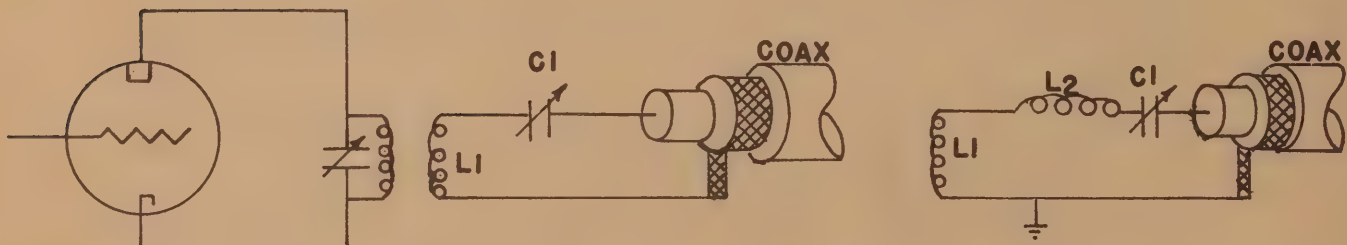
H. COUPLING TO THE TRANSMITTER

I. LINK COUPLED OUTPUT CIRCUITS

IF YOU EXPERIENCE ANY DIFFICULTY LOADING YOUR TRANSMITTER PROPERLY, THE FOLLOWING SUGGESTIONS SHOULD BE HELPFUL.

A. VARY THE LENGTH OF THE COAXIAL CABLE SLIGHTLY LONGER OR SHORTER.

B. USE TUNED LINK CIRCUITS AS INDICATED BELOW:



L AND C SHOULD RESONATE AT THE OPERATING FREQUENCY. IN THE ALTERNATE FOR SMALL LENGTH (WITH A SMALL NUMBER OF TURNS), L CAN BE INSERTED IN SERIES TO MAKE THE INDUCTANCE COME UP TO A VALUE WHICH WILL RESONATE AT THE OPERATING FREQUENCY. THE CAPACITY USED IN THESE TUNED LINK COUPLED CIRCUITS SHOULD NOT EXCEED THE MAXIMUM CAPACITY INDICATED IN THE FOLLOWING TABLE.

CAPACITY MMFD REQUIRED FOR COUPLING TO 52OHM
COAX WITH TUNED COUPLED CIRCUITS

<u>FREQUENCY</u>	<u>CAPACITY</u>
14Mc	115MMFD
21Mc	90MMFD
28Mc	60MMFD

IN MOST CASES THE TUNED LENGTH CIRCUITS WILL INCREASE THE COUPLING TO A SATISFACTORY POINT.

2. ^{PI}
HIGH SECTION OUTPUT CIRCUIT

TRANSMITTERS USING ^{PI}~~TPT~~-SECTION OUTPUT CIRCUITS WILL NOT NORMALLY SHOW ANY DIFFICULTY LOADING IN THE 52OHM COAXIAL CABLE. HERE AGAIN IF SOME DIFFICULTY IS EXPERIENCED TURNING OF THE COAXIAL TRANSMISSION LINES LENGTH SHOULD OBTAIN PROPER LOADING.

3. ANTENNA TUNERS

TRANSMITTERS USING ANTENNA TUNERS WILL NOT NORMALLY SHOW ANY DIFFICULTY LOADING INTO 52 OHM COAXIAL CABLE. INSTRUCTION MANUALS OR ADJUSTING DETAILS OF THE PARTICULAR TUNER CIRCUITS IN USE SHOULD OF COURSE BE FOLLOWED. IF YOU HAVE ANY QUESTIONS OR SPECIFIC INSTALLATION CONSIDERATION ADDRESS ALL CORRESPONDENCE TO:

HY-GAIN ANTENNA PRODUCTS
ENGINEERING DEPARTMENT H
1125 NORTH 22ND STREET
LINCOLN, NEBRASKA

NEW *Complete Rotating Assembly!*

500 IN. LBS. OF ROTATING POWER
10,000 IN. LBS. OF BRAKING POWER

the iron fist . . .



roto-brake

(BRAKE + ROTATOR + INDICATOR)

Patent Pending

Rotate! Hold!
Indicate!

\$139⁹⁵

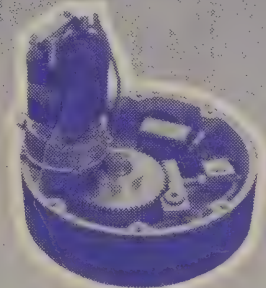
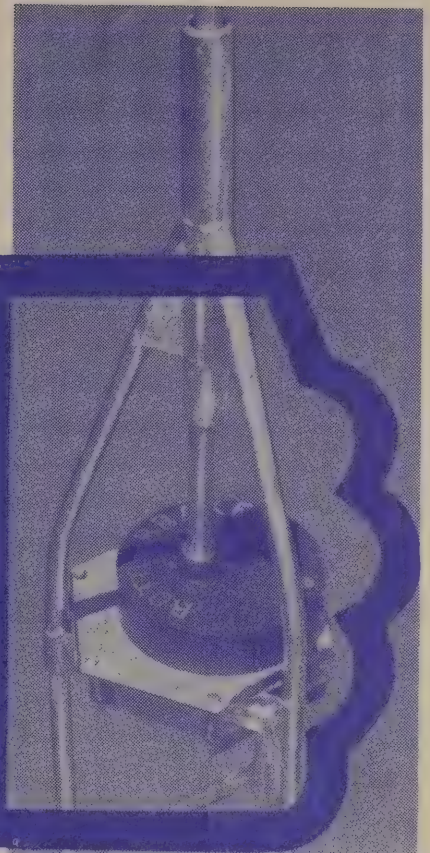
Complete with
Brake, Rotator
and Indicator

The Rotobrake, designed for internal mounting in steel towers 10-18" inside clearance, shipped complete with brackets for mounting in towers of this size. Kits available for mounting on side of pipe and pole towers. Brake unit encased in heavily ribbed, heavy wall, cast aluminum housing. Two bronze thrust and bearing surfaces are press fit into top and bottom of housing, designed to support more than 1000 lbs. of dead weight. Rotobrake is a complete rotating assembly, with spring actuated, solenoid released braking unit, built-in powerful twin 3600 rpm rotating motors, and Great Circle Map indicator designed to support more than 1000 lbs. of dead weight. Rotobrake is a complete rotating assembly, with spring actuated, solenoid released braking unit, built-in powerful twin 3600 rpm rotating motors, and Great Circle Map indicator designed to support more than 1000 lbs. of dead weight. Also available: dual rotator Rotobrake for rotation of extra large antenna assemblies. Twin rotators (four motors) and two gear reduction units develop 1000 in. lbs. of rotating torque: \$179.95. Built-in limit switches protect feed line.

400% Stronger

than Any Other Rotating and Braking Assembly!

Multi-colored Great Circle wall map indicator, 16" in diameter. Moving wedge of light, 10" wide at perimeter indicates beam direction. Countries outlined and call areas labeled. Control box mounts under operating table. Calibrated every degree of the compass for pinpoint accuracy.



High carbon machined steel gear and rack, heavy shoulder bolts and lock nuts, oil sealed bronze bearings provide positive braking action. Twin 3600 rpm motors develop 500 in. lbs. rotation torque. Gear reduction unit factory sealed.



MODEL EX-14

"EXPLORER 14"

ORDER NO. 395S

TELEX[®] *hy-gain*[®]

TELEX COMMUNICATIONS, INC.

MODEL EX-14

"EXPLORER 14"

ORDER NO. 395S

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CHAPTER 1

General Description

The Hy-Gain Explorer 14 is a very unique 4-element, three band beam antenna designed for broadband, high performance, high efficiency operation on the Amateur 10, 15, and 20 meter bands. The boom length of 14 feet 1 1/2 inches (4.17 m) and a longest element of 31 feet 6 inches (9.6 m) combine for a modest 17 foot 3 inch turning radius, small enough for most city lots. Broadbanding is accomplished through the use of a monoband reflector on 10 meters, a duoband reflector on 15 and 20 meters and a very unique driven element system called the Para-Sleeve System.

Stainless steel hardware and clamps are used on all electrical and mechanical connections. Hy-Gain's 50 ohm BN-86 balun and new Beta Multi-Match are supplied. Add-on kits for a 30 or 40 meter driven element are available as option QK-710. The antenna is designed to fit masts from 2" to 2 1/2" in diameter and can be rotated with Hy-Gain's CD-45II or Ham IV rotators.

Driven Element Description

The Explorer 14 utilizes a new concept in driven element design, called the Para-Sleeve System (Patent No. 4,604,628). Basically, the design consists of an open-sleeve dipole that has been optimized for maximum bandwidth and directivity within a Yagi-Uda configuration of parasitic elements. The open-sleeve dipole has evolved from the coaxial sleeve dipole; however, it is much easier to tune and exhibits less wind loading. The Para-Sleeve System consists of a trapped driven element for 15 and 20 meters, electrically connected to the balun and Beta-Match; and a set of two parallel sleeve elements for 10 meters.



Figure 1
Overall View

This driven element system allows half element lengths of 0.209 wavelengths on 20 meters, 0.242 wavelengths on 15 meters and 0.241 wavelength on 10 meters.

* For more information on the open-sleeve dipole, see H.E. King and J.L. Wong, "An Experimental Study of a Balun-Fed Open-Sleeve Dipole in Front of a Metallic Reflector", IEEE Trans. Antennas Propagation, Vol. AP-20, 201-204, March 1972. Also see: Roger Cox, "The Open-Sleeve Antenna", CQ Magazine, Vol. 39, No. 8, August 1983, Pages 13-19.

SPECIFICATIONS

Electrical

	<u>20M</u>	<u>15M</u>	<u>10M</u>
Frequencies of Operation:			
Under 2:1 VSWR (MHz)	14.0-14.35	21.0-21.45	28.0-29.7
Under 1.5:1 VSWR (MHz)	14.17-14.33	21.22-21.45	28.55-29.55
Front-to-Back Ratio (dB): Maximum	27	27	21
Average Half-Power Beamwidth (deg)	65	66	67
Maximum Gain (dBi) (average gain for 3 bands = 8.1 dBi)	7.5	8.0	8.8
Maximum Power	----- Maximum Legal -----		
Lightning Protection	----- DC Ground -----		

Mechanical

Boom Length.....	14' 1 1/2" (4.3 m)
Boom Diameter	2 inches (51 mm)
Longest Element.....	31' 6" (9.6 m)
Longest Driven Element	20M - .209 wavelength
(one-half total length)	15M - .242 wavelength
	10M - .241 wavelength
Turning Radius.....	17' 3" (5.3 m)
Accepts Mast	2" to 2 1/2" O.D. (51 mm to 63.5 mm)
Net Weight	45 lbs. (20.4 kg)
Maximum Wind Survival	100 mph (161 kmph)
Wind Surface Area	7.5 sq. ft. (.69 sq. m)
Wind Load at 80 mph	192 lbs. (87.1 kg)
Hardware	All stainless steel
Suitable Rotors	Hy-Gain CD-45II, Ham IV
Shipping Weight.....	50 lbs. (22.7 kg)_

CHAPTER 2

Preparation For Assembly

FOR OUR OVERSEAS CUSTOMERS: If you use the Metric System, see American-to-Metric Conversion Table in the rear of this manual. The United States uses American units of weights and measures.

Choose a large, clear area to assemble the EX-14. The area must be at least 14' x 32' (4.3 m x 9.7 m). You may wish to use sawhorses or chairs to support the boom during assembly. An alternate method involves driving a 5' (1.5 m) length of mast material into the ground and attaching the boom and boom-to-mast bracket to this mast temporarily during assembly. This permits eye level installation of parts and allows easy alignment of elements after assembly. If you assemble this antenna over a grassy area, precautions should be taken so that hardware is not accidentally lost during assembly. A concrete driveway is an excellent area for assembly.

Tools: The following tools are required for easy assembly of the EX-14:

TypeTool	Qty
Tape Measure, 12 foot.....	1
Adjustable Wrench, 8 inch.....	2
Nut Driver, 7/16 inch.....	1
Nut Driver, 3/8 inch.....	1
Nut Driver, 5/16 inch.....	1
Standard Hand Pliers.....	1

When unpacking your antenna, check inside of all tubing parts (traps, smaller tubing, etc.). To conserve space, these smaller articles are sometimes put inside larger pieces. Check all parts against the Parts List to make sure no parts are missing. The hardware supplied with this antenna is bagged by thread size for your convenience.

All tubing supplied with the EX-14 telescopes together. Make all measurements to the given dimensions, plus or minus, no more than 1/8 inch!

The assembly of this antenna will be easier if you read this manual completely through at least three (3) times before beginning assembly. Allow at least 5 hours for assembly. Double and triple check ALL dimensions after assembly.

NOTE: An extra Figure 12 has been inserted in this manual for use when assembling the antenna.

Option QK-710

The Hy-Gain Model QK-710 is an optional kit that will allow you to add 30 or 40 meter operation to your Explorer 14 antenna. The kit supplies all the necessary hardware and instructions to add an extension onto the Para-Sleeve driven element for either 30 or 40 meter operation.

If you anticipate adding this kit to your Explorer 14, you may make the following adjustments before adding the QK-710.

- Disassemble the Para-Sleeve spacers from the sleeve elements (FS-1 and RS-1). See Figure 14. An extension to the spacers will be added.
- Increase the distance between the central driven element and both sleeve elements from 6" to 7". This will reduce the distance to the director and 10 meter reflector by 1" each. See Figure 12.
- Increase the length of the DE-2 from 36 1/2" to 37 1/2".
- Slide the 15 meter DE trap all the way into the DE-2.
- Adjust FS-2 to 48" and RS-2 to 44".
- Remove DE-3 and the 1/2" element tubing clamps from the center driven element. Save the compression clamps.

Item No.	Description
1	Bracket, Cast aluminum
2	Bracket, Casting-to-Boom
3	Clamp, Boom-to-Bracket
20	Tube, aluminum, 2" x 83 3/4"
44	Bolt, hex head, 1/4" - 20 x 3/4", stainless steel
48	Lockwasher, internal, 1/4", stainless steel
49	Nut, hex, 1/4"-20, stainless steel
58	Bolt, hex head, 5/16" - 18 x 2 3/4", stainless steel
59	Bolt, hex head, 5/16" - 18 x 3", stainless steel
60	Bolt, hex head, 5/16" - 18 x 5", stainless steel
61	Lockwasher, split, 5/16", stainless steel
62	Nut, hex, 5/16" - 18, stainless steel

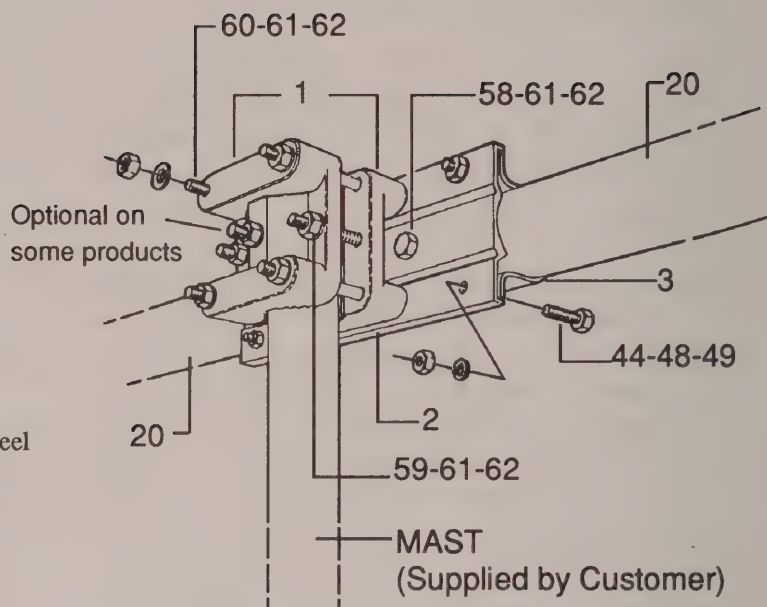


Figure 2
Boom-To-Mast Bracket

Assembly of the Boom-to-mast Brackets and Boom

Select the boom-to-bracket clamp parts (Item Nos. 2 and 3). Loosely assemble them on the boom ends (Item No. 20), as shown in Figure 2. Line up the holes on both brackets and both boom ends. Secure the two brackets together with four (4) 1/4"-20 x 3/4" bolts, lockwashers and nuts. Secure the brackets to the boom ends using the 5/16"-18 x 2 3/4" bolts, lockwashers and nuts. Tighten these six (6) bolts securely.

Assemble the two cast aluminum brackets (Items No. 1) on the mast at the desired height above your tower. Secure the two brackets together using the two (2) 5/16"-18 x 3" bolts, lockwashers and nuts. You may wish to drill a hole through your mast so that a 5/16"-18 x 3 1/2" bolt may be inserted through the cast brackets and the mast and tightened. This bolt will prevent the antenna from twisting on the mast in high winds. See Figure 2. The four (4) 5-inch bolts will be installed when the antenna is installed on the mast.

Element-to-boom Brackets

To save time, loosely assemble all of the element-to-boom brackets and their appropriate hardware before beginning further installation of the antenna. See Figure 4. The different size brackets can be identified by a number stamped into the surface of each bracket half. DO NOT tighten the bolts until instructed to do so.

NOTE: Bracket size #14 is used on the center driven element. Bracket size #13 is used on the driven element sleeves and on the director and 15/20 reflector. Each size number is stamped into the surface of each bracket.

At this time, slide each element-to-boom bracket over a boom end and position all of the brackets close to their final attachment points. See Figure 3 and Figure 12.

Hand-tighten the hardware on each element-to-boom bracket to prevent losing small parts, and to prevent bracket movement on the boom.

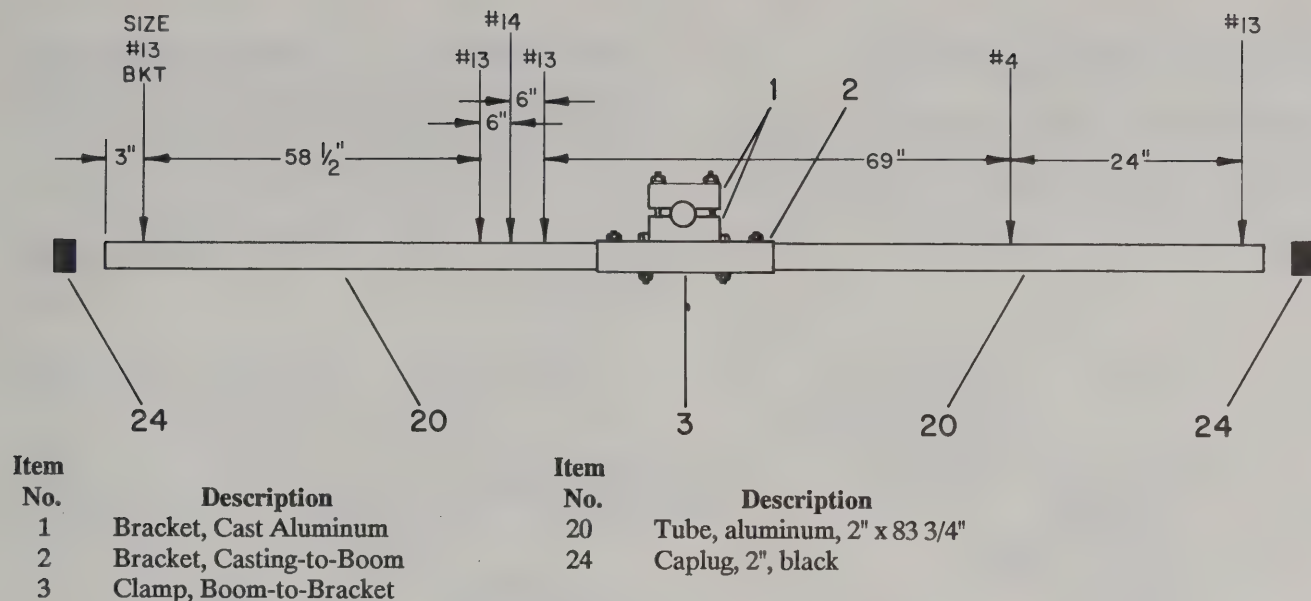
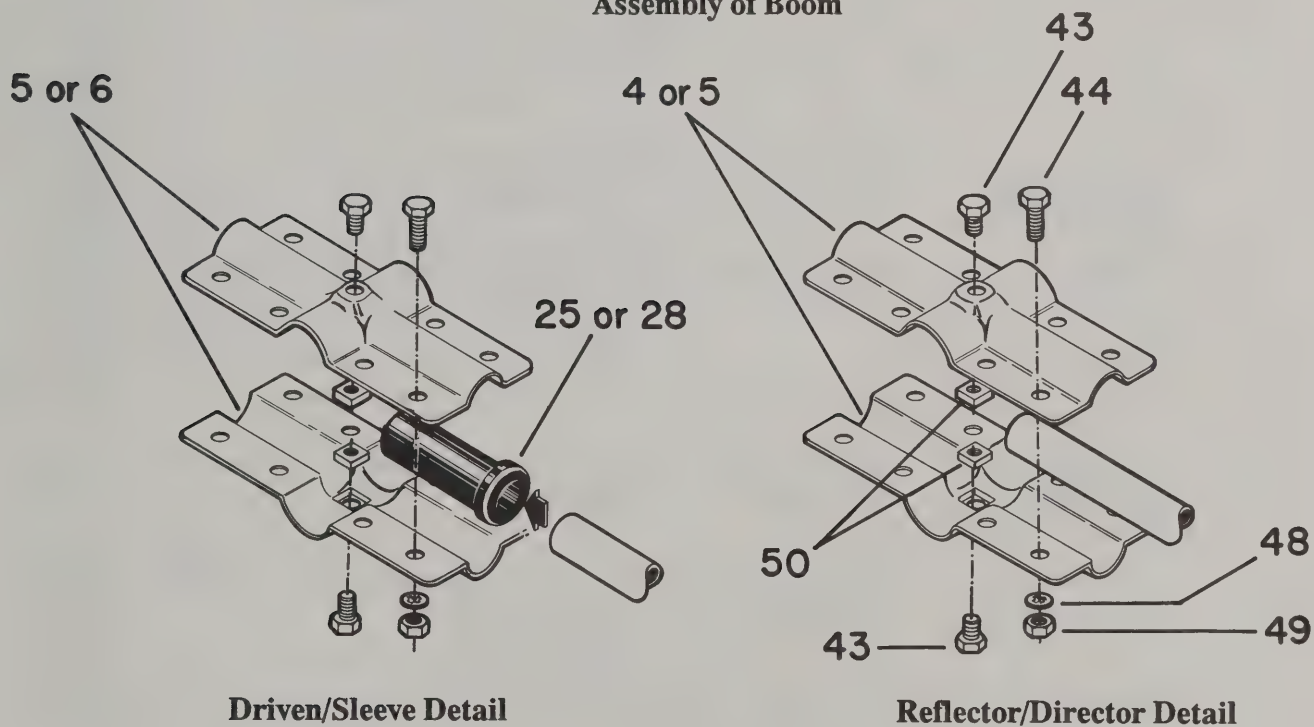


Figure 3
Assembly of Boom



NOTE: The #4, #13 and #14 brackets use the same size bolts, lockwashers and nuts — in identical locations.

Item No.	Description	Item No.	Description
4	Bracket, Element-to-Boom, #4	43	Bolt, hex head, 1/4"-20 x 3/8", stainless steel
5	Bracket, Element-to-Boom, #13	44	Bolt, hex head, 1/4"-20 x 3/4", stainless steel
6	Bracket, Element-to-Boom, #14	48	Lockwasher, internal, 1/4", stainless steel
25	Insulator, Front & Rear Sleeves, 5/8" I.D.	49	Nut, hex, 1/4"-20, stainless steel
28	Insulator, Driven Element, 1 1/4" I.D.	50	Nut, square, 1/4"-20, stainless steel

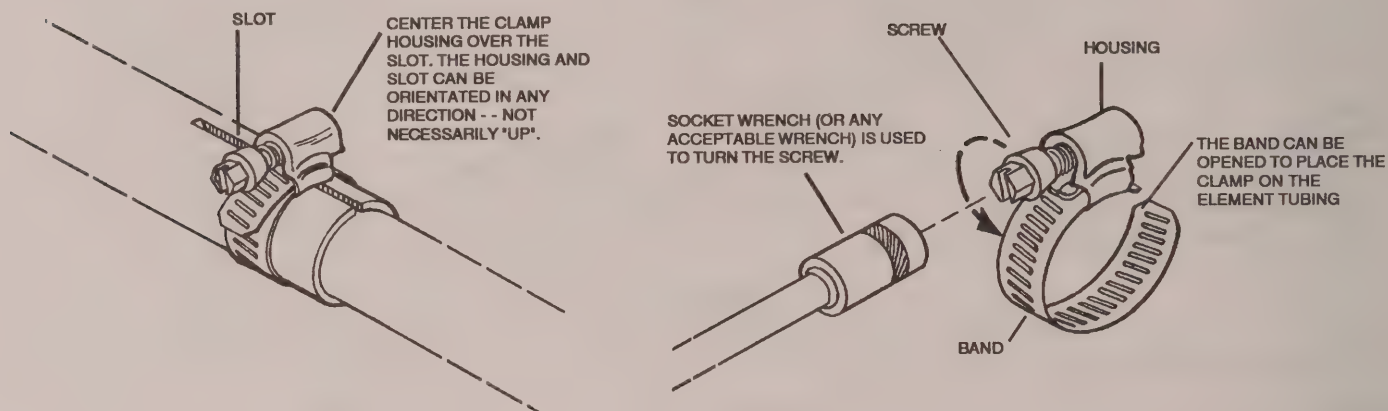
Figure 4
Element-To-Boom Brackets

Installation of Tubing Clamps

Select the proper size tubing clamp as shown in the chart. When installing the clamps, place the clamp near the tube end with the top of the clamp over the slot in the tube as shown in Figure 5.

After adjustment of the tubing length, tighten the clamp with a 5/16 inch nut driver, socket, or open end wrench until the tubing will not twist or telescope. DO NOT overtighten.

MA-0000-A-058



Part No.	Description	Fits Tubing Sizes
358756	Clamp, Size #6 all stainless steel 5/16" hex head screw	1/2 and 3/4"



Part No.	Description	Fits Tubing Sizes
358757	Clamp, Size #10 all stainless steel 5/16 hex head screw	1"



Part No.	Description	Fits Tubing Sizes
358758	Clamp, Size #16 all stainless steel 5/16 hex head screw	1 1/4"

Figure 5
Tubing Clamps

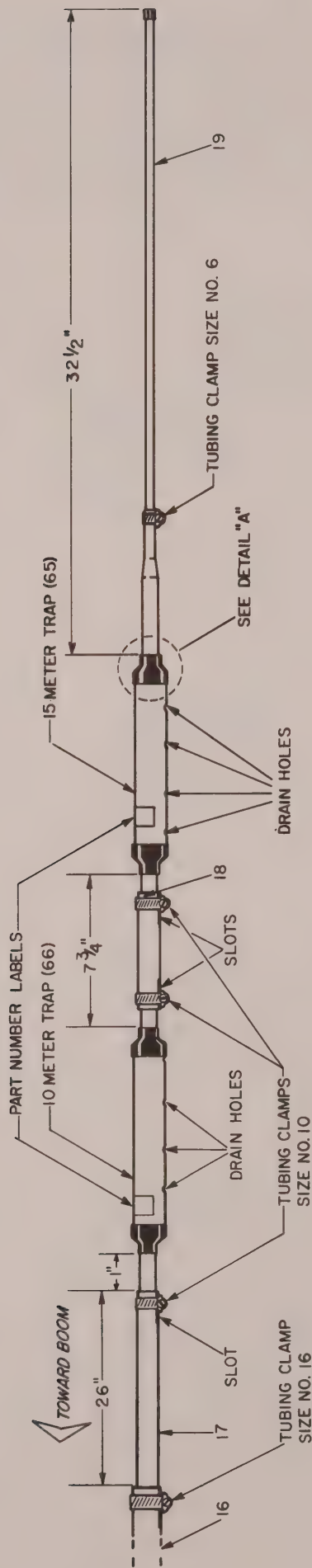
Element Assembly

Because of the broadband nature of the EX-14, it is supplied with only one setting for use on all modes on all of the 20, 15, and 10 meter bands. If assembled and installed correctly, the VSWR should be below 2:1 on any frequency on these bands.

The following steps will be in singular form. Do each element assembly step, first for one side of the boom and then for the other side. The dimensions shown in Figure 12 are in American units on the right side and Metric on the left side.

The elements may be assembled indoors, perhaps in the garage or basement work area, especially if the weather is cold, wet or windy outside. Take your time, and recheck all element dimensions. The elements should be attached to the boom outside, at a location near your tower.

After each element is assembled to the boom, tighten the eight (8) 1/4"-20 x 3/4" bolts. After all elements are assembled, make sure that they all lie in a horizontal plane at 90 degrees to the mast, then securely tighten the two (2) anchor bolts on each element.



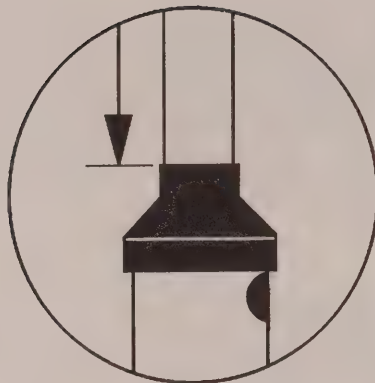
10-15-20 Meter Director Element

Assemble the 10-15-20 meter director as shown in Figure 6 and 12. Use trap part numbers 878749 and 878694 and install with the tubing slots and trap drain holes facing the ground and the labeled trap ends toward the boom. Use Figure 6 and Detail "A" as guides. Tighten all element tubing clamps and recheck all dimensions.

NOTE: Make sure that all trap caps are firmly seated while measuring dimensions.

Item No.	Description
----------	-------------

16	Tube, aluminum, 1 1/4" x 48", D1
17	Tube, aluminum, 1 1/8" x 30", swaged, D2
18	Tube, aluminum, 1" x 6", D3
19	Tube, aluminum, 7/16" x 28", D4
65	Trap, 15m
66	Trap, 10m

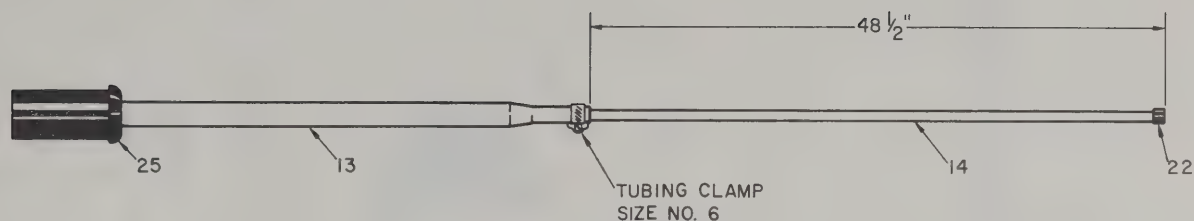


Dimensions Measured as Shown

Detail A

Trap Detail – Measuring Point

Figure 6
10-15-20 Meter Director Element



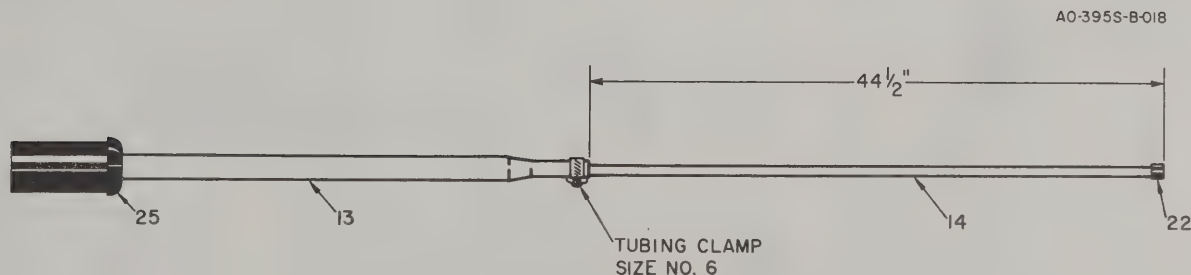
Front Sleeve Element

Select the FS-1 section (5/8" x 48") and a small driven element insulator (Item No. 25). Slip the insulator on the unslotted end of the FS-1 section, completely.

Item No.	Description
13	Tube, aluminum, 5/8" x 48", swaged, RS-1, FS-1
14	Tube, aluminum, 7/16" x 53"
22	Caplug, 7/16", black
25	Insulator, 5/8", I.D., front and rear sleeves

Install a #6 tubing clamp on the slotted end of the FS-1 section and insert one end of the FS-2 section (7/16" x 53") to the dimension shown in Figure 7. Tighten the tubing clamp securely and recheck the FS-2 dimension.

Figure 7
Front Sleeve Element



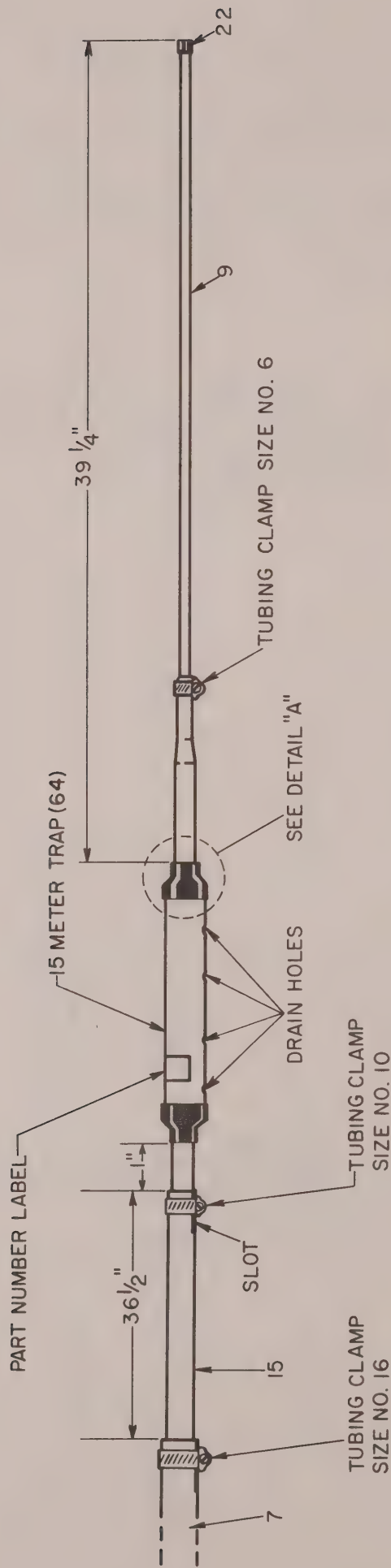
Rear Sleeve Element

Select the RS-1 section (5/8" x 48") and a small driven element insulator (Item No. 25). Slip the insulator on the unslotted end of the RS-1 section, completely.

Item No.	Description
13	Tube, aluminum, 5/8" x 48", swaged, RS-1, FS-1
14	Tube, aluminum, 7/16" x 53"
22	Caplug, 7/16", black
25	Insulator, 5/8", I.D., front and rear sleeves

Assemble the remainder of the Rear Sleeve Element using a #6 tubing clamp and the RS-2 section (7/16" x 53"). Set it to the dimension shown in Figure 8. Tighten the tubing clamp securely and recheck the RS-2 dimension.

Figure 8
Rear Sleeve Element



Center Driven Element

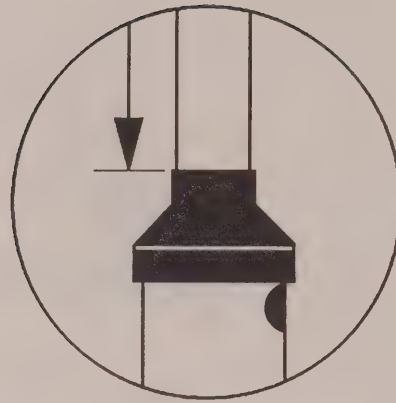
Select the DE-1 section (1 1/4" x 83") and a large driven element insulator (see Figure 4). Slip the insulator on the unslotted end of the DE-1 section, completely.

Install a #16 tubing clamp onto the slotted end of the DE-1 and insert the unslotted end of the DE-2 (1 1/8" x 42") to the dimension shown in Figure 9. Tighten the tubing clamp securely and recheck the DE-2 dimension.

Assemble the remainder of the center driven element in the same manner using dimensions from Figure 9. Use 15 meter trap Part Number 878637 in this assembly.

Item No.	Description
7	Tube Assembly, aluminum, 1 1/4" x 83", R1, DE-1
9	Tube, aluminum, 7/16" x 37", R3, DE-3
15	Tube, aluminum, 1 1/8" x 42", swaged, DE-2
22	Caplug, 7/16", black
64	Trap, 15m, driven element

NOTE: ON ALL TRAPS MAKE SURE ALL DRAIN HOLES ARE FACING THE GROUND, ALL LABELED ENDS ARE TOWARDS THE BOOM AND ALL INSULATORS AND TRAP CAPS ARE FIRMLY SEATED. ALSO ON ALL TUBING ATTACHED TO TRAPS, MAKE SURE ALL SLOTS ARE FACING THE GROUND AND THE SMALL DRAIN HOLES ARE ALIGNED WITH THE SLOTS.

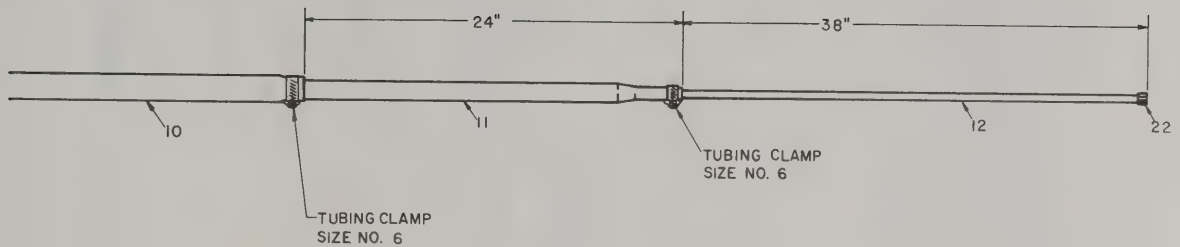


Dimensions Measured as Shown

Detail A

Trap Detail — Measuring Point

Figure 9
Center Driven Element



10-Meter Reflector Element

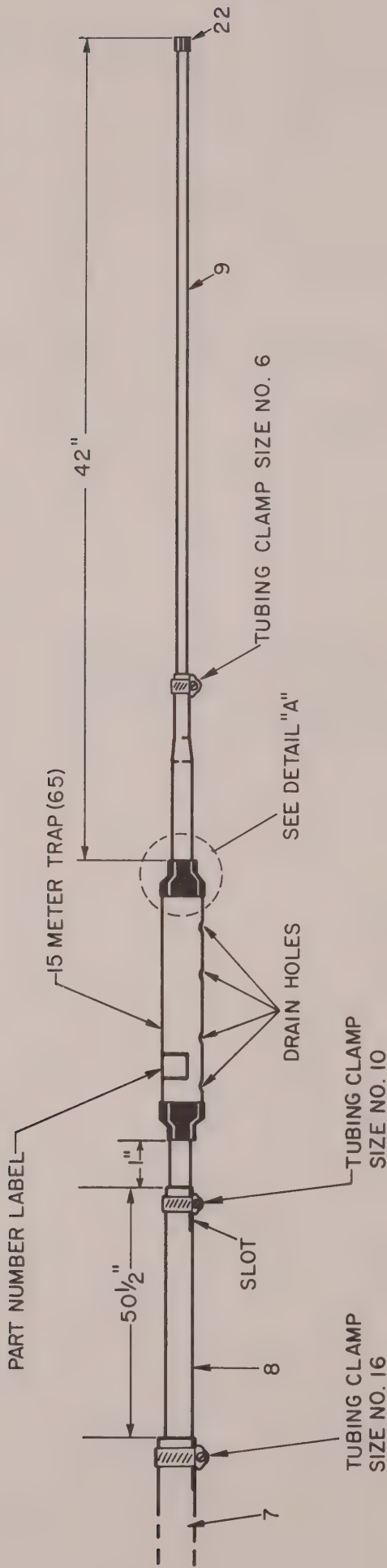
Assemble the 10-meter reflector as shown in Figure 10, using #6 tubing clamps. Tighten all element tubing clamps with the slots facing the ground and recheck all dimensions.

Item No.

Description

10	Tube, aluminum, 7/8" x 55", swaged, R2-1
11	Tube, aluminum, 5/8" x 26", swaged, R2-2
12	Tube, aluminum, 7/16" x 42 3/4", R2-3
22	Caplug, 7/16", black

Figure 10
10 Meter Reflector Element



15-20 Meter Reflector Element

Assemble the 15-20 meter reflector, as shown in Figure 11, using #16, #10 and #6 tubing clamps. Use trap Part Number 878694 and install with tubing slots and trap drain holes facing the ground and the labeled trap end toward the boom. Use Figure 11 and Detail "A" as guides. Tighten all element tubing clamps and recheck all dimensions.

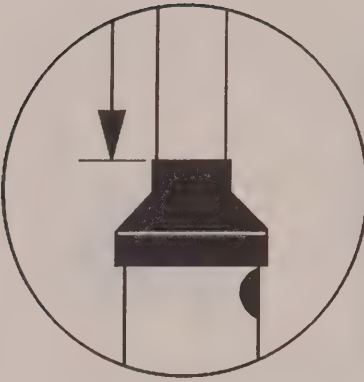
Element Alignment

After all elements have been installed, align all elements in the horizontal plane at 90° from the mast. Also, recheck all dimensions between element centers as shown in Figure 12. Securely tighten each set of eight (8) 1/4"-20 x 3/4" bolts on every element-to-boom bracket, then tighten both anchor bolts on each bracket. See Figure 4. The anchor bolts should be tightened flush to the aluminum bracket.

Item No.
7
8
9
22
65

Description

- Tube Assembly, aluminum, 1 1/4" x 83", R1, DE-1
- Tube, aluminum, 1 1/8" x 54", swaged, R2
- Tube, aluminum, 7/16" x 37", R3, DE-3
- Caplug, 7/16", black
- Trap, 15m

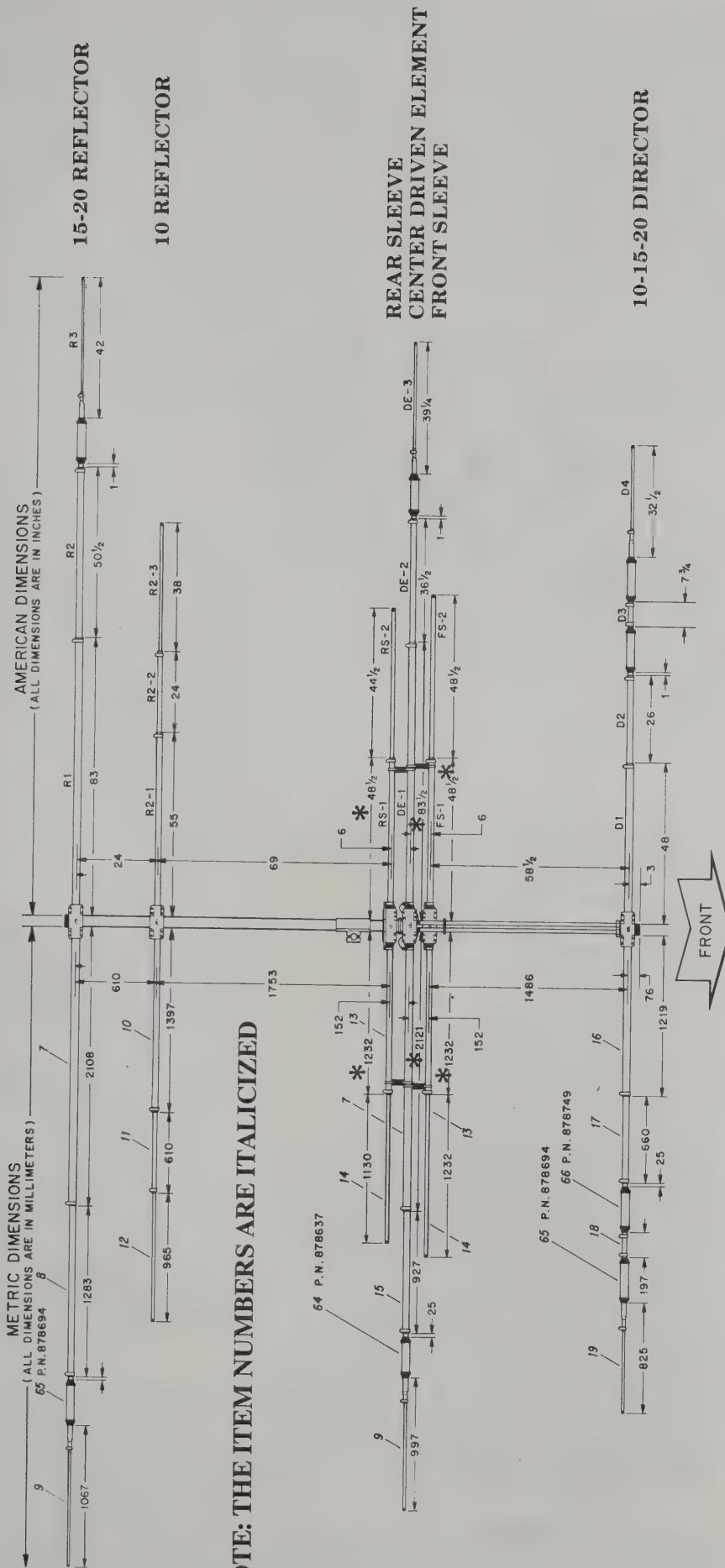


Dimensions Measured as Shown

Detail A

Trap Detail — Measuring Point

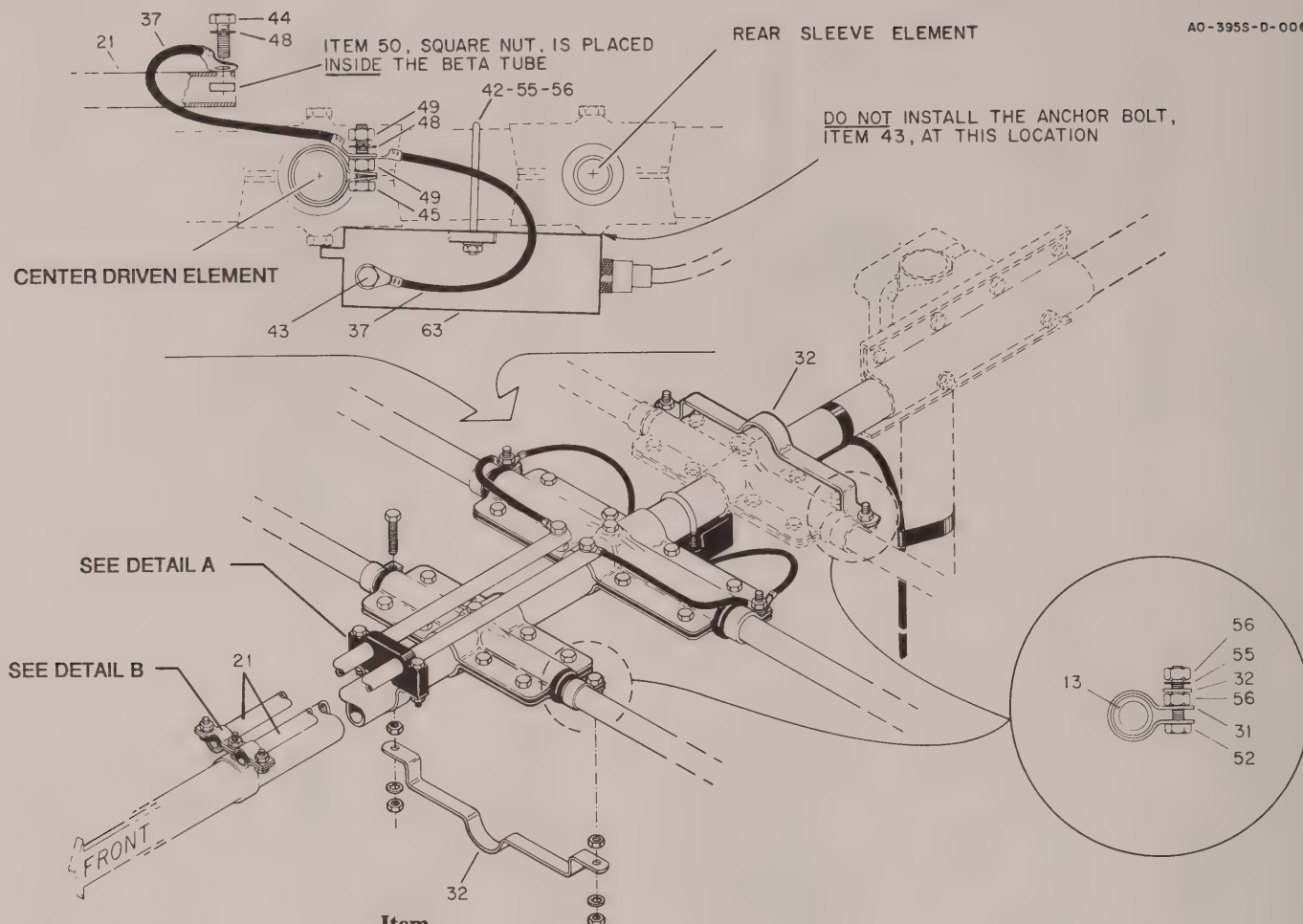
Figure 11
15-20 Meter Reflector Element



***NOTE: THESE MEASUREMENTS ARE LONGER THAN THE MEASUREMENTS OF THE TUBE ITSELF DUE TO THE DEPTH OF THE BOOM-TO-DRIVEN ELEMENT INSULATORS.**

Item No.	Designator	Description	Item No.	Designator	Description
7	R1, DE-1	1 1/4" x 83"	15	DE-2	1 1/8" x 42"
8	R2	1 1/8" x 54"	16	D1	1 1/4" x 48"
9	R3, DE-3	7/16" x 37"	17	D2	1 1/8" x 30"
10	R2-1	7/8" x 55"	18	D3	1" x 6"
11	R2-2	5/8" x 26"	19	D4	7/16" x 28"
12	R2-3	7/16" x 42 3/4"	64	15M DE Trap	15M DE Trap
13	RS-1, FS-1	5/8" x 48"	65	15M Trap	15 M Trap
14	RS-2, FS-2	7/16" x 53"	66	10M Trap	10 M Trap

Figure 12
Element Assembly and Antenna Dimensions

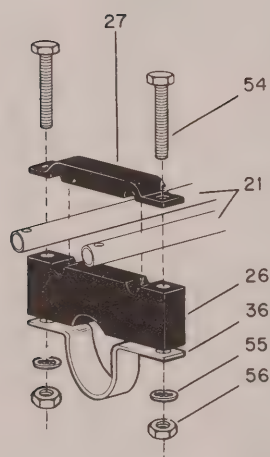


Item
No.

Description

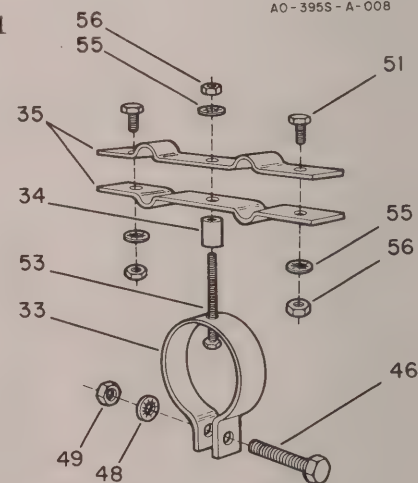
- | | |
|----|---|
| 13 | Tube, aluminum, 5/8" x 48", swaged, RS-1, FS-1 |
| 21 | Tube, aluminum 3/4" x 60" |
| 26 | Insulator, Beta Support (Bottom) |
| 27 | Insulator, Beta Support (Top) |
| 31 | Clamp, Tubing, 5/8" |
| 32 | Strap, Boom Jumper |
| 33 | Strap, Boom-to-Beta |
| 34 | Sleeve, Beta Shorting |
| 35 | Strap, Beta Shorting, 3/8" radius |
| 36 | Clamp, Beta Support |
| 37 | "Pigtail" Wire, 7" |
| 42 | U-Bolt, #10-24 x 2 1/2" x 2 3/4" |
| 43 | Bolt, hex head, 1/4"-20 x 3/8", stainless steel |
| 44 | Bolt, hex head, 1/4"-20 x 3/4", stainless steel |
| 45 | Bolt, hex head, 1/4"-20 x 1 1/4", stainless steel |
| 46 | Bolt, hex head, 1/4"-20 x 1 1/2", stainless steel |
| 48 | Lockwasher, internal, 1/4", stainless steel |
| 49 | Nut, hex, 1/4"-20, stainless steel |
| 50 | Nut, square, 1/4"-20, stainless steel |
| 51 | Bolt, hex head, #10-24 x 5/8", stainless steel |
| 52 | Bolt, hex head, #10-24 x 1", stainless steel |
| 53 | Bolt, hex head, #10-24 x 1 1/2", stainless steel |
| 54 | Bolt, hex head, #10-24 x 2", stainless steel |
| 55 | Lockwasher, internal, #10, stainless steel |
| 56 | Nut, hex, #10-24, stainless steel |
| 63 | Balun, BN-86 |

AO-395S-A-007



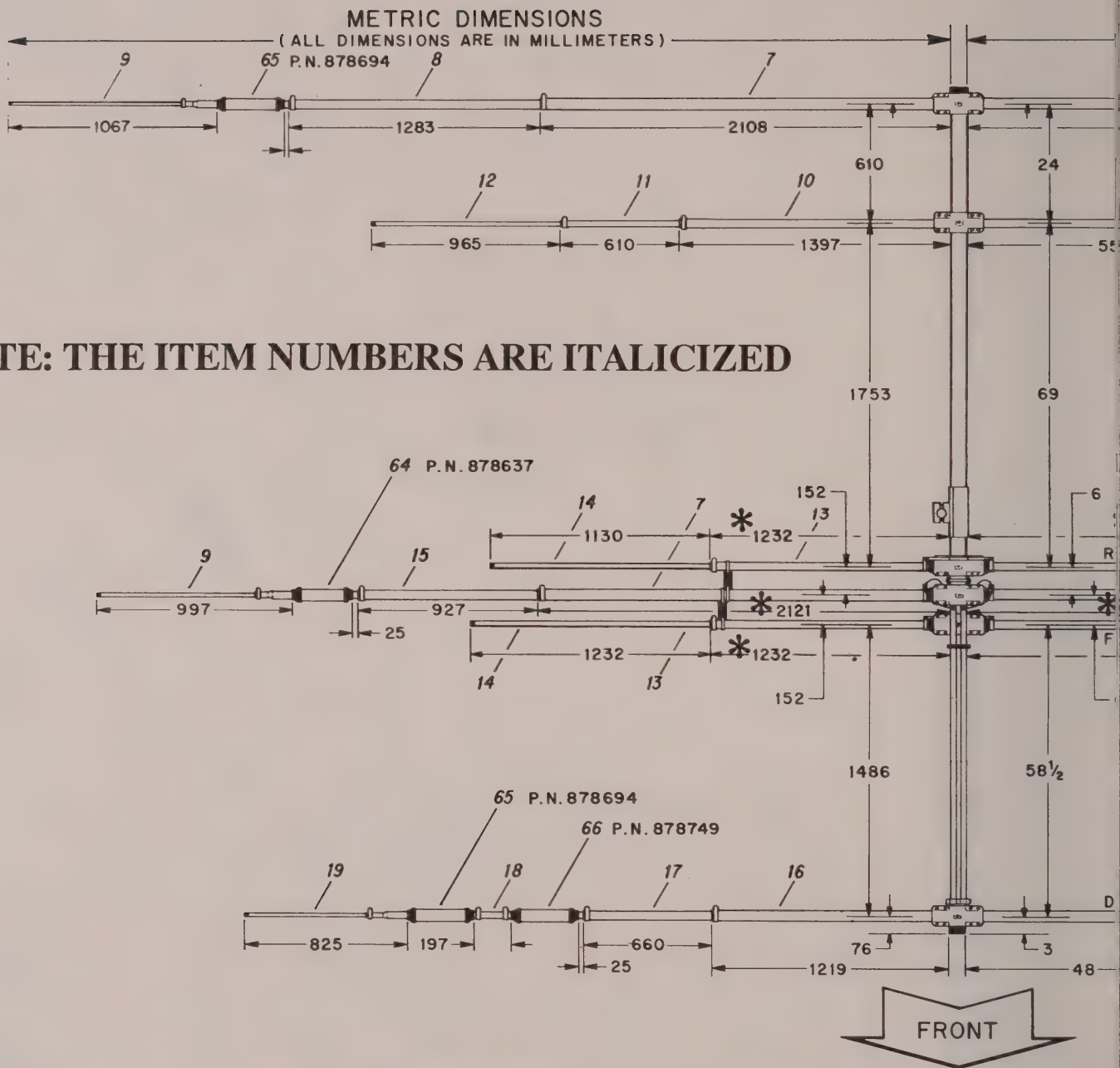
Detail A
Beta Support Clamps
and Insulator Assembly

AO-395S-A-008



Detail B
Beta Shorting Clamp Assembly

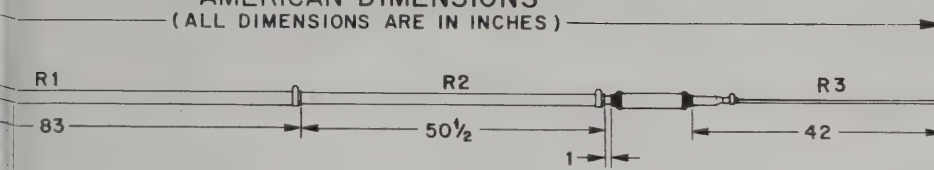
Figure 13
Para-Sleeve Driven Element Connections



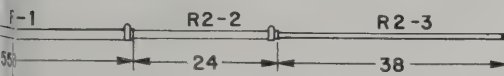
Item No.	Designator	Description	Item No.	Desi
7	R1, DE-1	1 1/4" x 83"	15	DE-2
8	R2	1 1/8" x 54"	16	D1
9	R3, DE-3	7/16" x 37"	17	D2
10	R2-1	7/8" x 55"	18	D3
11	R2-2	5/8" x 26"	19	D4
12	R2-3	7/16" x 42 3/4"	64	15M I
13	RS-1, FS-1	5/8" x 48"	65	15M T
14	RS-2, FS-2	7/16" x 53"	66	10M T

Figure 12
Element Assembly and Antenna

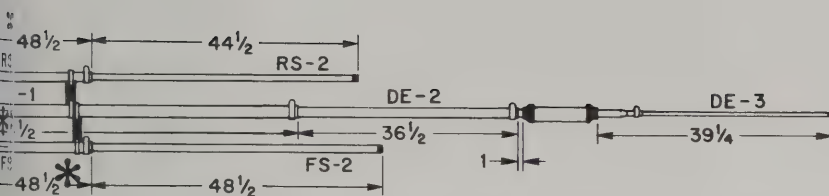
AMERICAN DIMENSIONS
(ALL DIMENSIONS ARE IN INCHES)



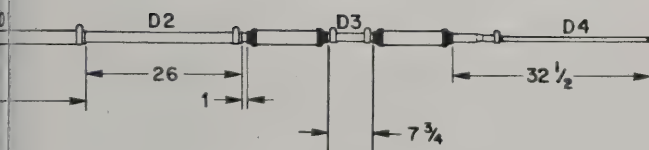
15-20 REFLECTOR



10 REFLECTOR



REAR SLEEVE
CENTER DRIVEN ELEMENT
FRONT SLEEVE



10-15-20 DIRECTOR

ator	Description
	1 1/8" x 42"
	1 1/4" x 48"
	1 1/8" x 30"
	1" x 6"
	7/16" x 28"
E Trap	15M DE Trap
ap	15 M Trap
ap	10 M Trap

***NOTE: THESE MEASUREMENTS ARE LONGER THAN THE MEASUREMENTS OF THE TUBE ITSELF DUE TO THE DEPTH OF THE BOOM-TO-DRIVEN ELEMENT INSULATORS.**

Final Assembly Para-sleeve Driven Element System

Select the two (2) 1 1/4" aluminum tubing clamps, four (4) 5/8" aluminum tubing clamps, two (2) 1/4"-20 x 1 1/4" bolts, two (2) 1/4"-20 hex nuts, six (6) 1/4" lockwashers, four (4) #10-24 x 1" bolts, and four (4) #10-24 hex nuts. Assemble the two (2) 1 1/4" tubing clamps onto the center driven element and the four (4) 5/8" tubing clamps onto the sleeve elements as shown in Figure 13. Tighten these clamps securely.

Select the two (2) boom jumper straps, four (4) #10 lockwashers and four (4) #10 hex nuts. Assemble these straps to the sleeve elements as shown in Figure 13. The front boom jumper strap is installed below the boom, and the rear boom jumper strap is installed above the boom. DO NOT allow these straps to short out against the boom. Tighten the hardware securely.

Select the BN-86, 50 ohm balun, U-bolt, four (4) 7" pigtail wires and associated hardware and assemble as shown in Figure 13. Tighten all hardware securely. The balun should slope down towards the rear end, when installed, so that water may drain out during rain showers.

Beta Match Assembly

NOTE: The Beta Match Assembly is not used in the 40-meter conversion of the Explorer 14, therefore, it need not be assembled if you plan to add 40-meter operation. Also, the two pigtail wires going to the Beta Match need not be installed for 40 meters.

Select the two (2) beta match tubes (3/4" x 60"), beta support clamp, beta support insulator, beta top insulator, and associated hardware and clamps, as shown in Figure 13 and Details "A" and "B". Assemble as shown in Figure 13 and Details "A" and "B".

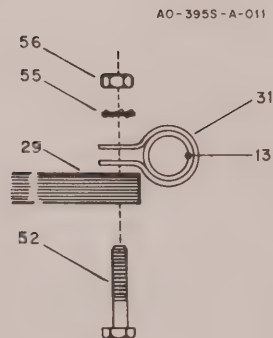
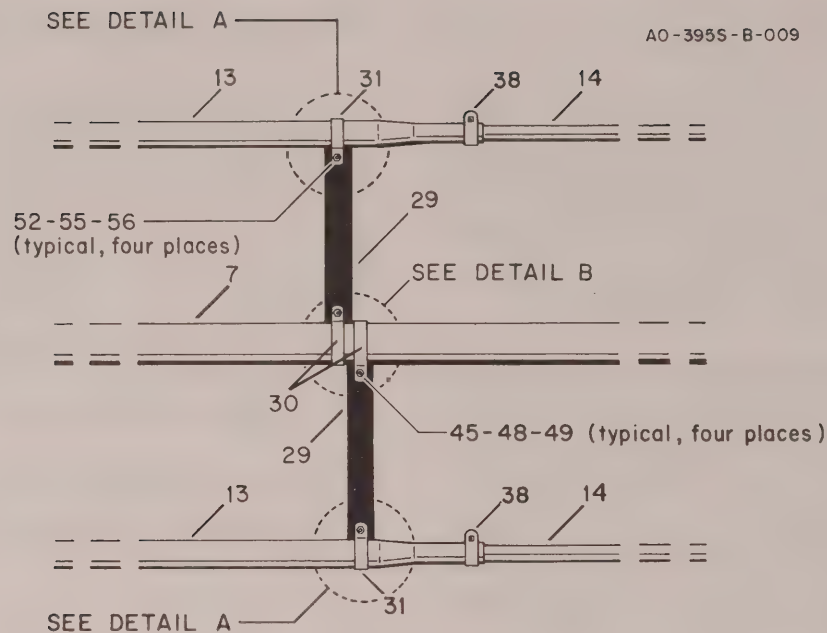
The shorting clamp should be flush with the ends of the beta match tubes. The opposite ends of the beta tubes should be even with the front edge of the center driven element-to-boom bracket. Tighten all hardware securely.

Do not allow the pigtail wires to touch either the boom or the element-to-boom bracket.

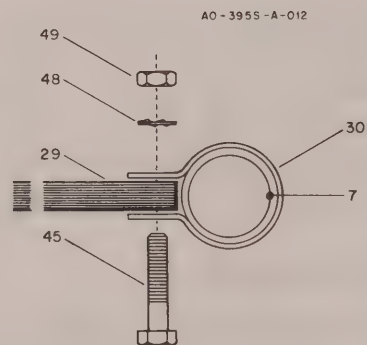
Para-sleeve Spacer Assembly

Select the remaining four (4) 1 1/4" aluminum tubing clamps, four (4) 5/8" aluminum tubing clamps, four (4) sleeve spacer insulators, four (4) 1/4"-20 x 1 1/4" bolts, four (4) 1/4" lockwashers, four (4) 1/4"-20 hex nuts, four (4) #10-24 x 1" bolts, four (4) #10 lockwashers, and four (4) #10-24 hex nuts and assemble as shown in Figure 14. The sleeve spacers should be installed near the ends of the FS-1 and RS-1 sections. Tighten all bolts securely.

NOTE: If the QK-710 option is used, do not attach the spacers to the sleeve elements until the extension is added.



Detail A
5/8" Clamp on Open-Sleeve
Spacer Insulator



Detail B
1 1/4" Clamp on Open-Sleeve
Spacer Insulator

Item No.	Description
7	Tube Assembly, aluminum, 1 1/4" x 83", R1, DE-1
13	Tube, aluminum, swaged, 5/8" x 48", RS-1, FS-1
14	Tube, aluminum, 7/16" x 53", RS-2, FS-2
29	Insulator, Open-Sleeve Spacer
30	Clamp, Tubing, 1 1/4"
31	Clamp, Tubing, 5/8"
38	Clamp, Compression, 1/2", stainless Steel

Item No.	Description
45	Bolt, hex head, 1/4"-20 x 1 1/4", stainless steel
48	Lockwasher, internal, 1/4", stainless steel
49	Nut, hex, 1/4"-20, stainless steel
52	Bolt, hex head, #10-24 x 1", stainless steel
55	Lockwasher, internal, #10, stainless steel
56	Nut, hex, #10, stainless steel

Figure 14
Para-Sleeve Spacer Detail

Final Assembly Rope Dampening

Select the dampener rope and cut it into two equal lengths of six feet each. Slip a rope into the end of each 10 meter reflector element. With about a 1/2" of rope extending from the element end, separate the fibers and fold them back over the element end. Refer to Figure 15. Now slip a 7/16" caplug over the element and rope. The rope inside the element will dampen vibrations caused by low wind speeds. Place a 7/16" caplug on each end of the trapped elements. Select the 2" caplugs and place one on each boom end. Check all element spacings and dimensions and tighten all of the bolts before continuing.

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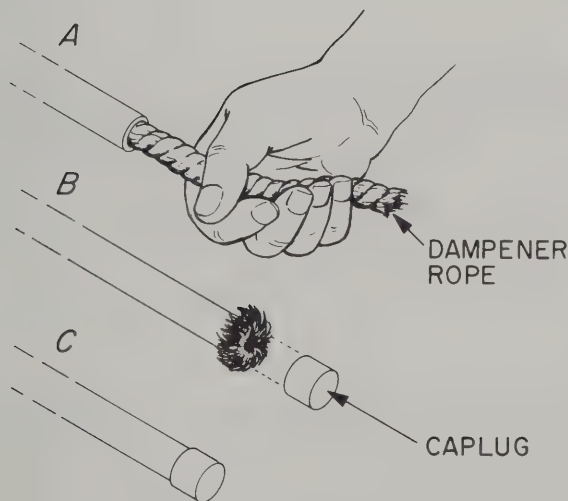


Figure 15
Rope Dampening

Final Assembly Checklist

1. — Check the distance between elements, 58 1/2", 6", 6", 69" and 24". (Distances will be 57 1/2", 7", 7", 68" and 24" if option QK-710 is used.)
2. — Check the exposed element lengths against the dimensions shown in Figure 12. Check both sides of each element. Ensure that the trap caps are firmly seated. (Note differences if option QK-710 is used.)
3. — Check the tightness of each element tubing clamp. You should not be able to turn an element that is securely clamped within a larger element.
4. — Check to ensure all elements lie in the same plane and will be perpendicular (at 90°) to the mast when installed.
5. — Ensure that all trap drain holes and all tubing slots will be facing the ground when installed.
6. — Securely tighten all bolts used in the element-to-boom brackets.
7. — Securely tighten all bolts used in the parasleeve and beta tube assemblies.

CHAPTER 3

Installation

IMPORTANT

The Explorer 14 is a moderately large antenna and requires some consideration as to how you are going to get it to the top of the tower. Thoroughly read this section before beginning to install your antenna.

Installation on a Crank-Up Tower

Crank the tower down completely or as low as it will go, and block all sections from moving by using a 2" x 4" piece of wood or a solid iron bar for heavier towers. The block should be inserted through the lattice structure before the tower is completely down, then the tower can be cranked down until the block takes the weight off the winch.

Use a ladder to reach the top of the tower. **NEVER CLIMB THE LATTICE STRUCTURE OF ANY CRANK-UP TOWER!** Attach the mast to the tower and rotator. (The cast aluminum boom-to-mast brackets should be installed on the mast as shown in Figure 2. See Chapter 2.) Attach a gin pole to the tower to assist in lifting the Explorer 14.

Attach the lifting rope to the balance point of the antenna. Be careful not to damage the rear sleeve assembly next to the boom-to-mast clamp. The lifting rope should be fed through the gin pole or other pulley arrangement attached to the tower. The other end should be at ground level, available to the ground crew for lifting. Guide ropes may be loosely looped over the boom ends and used by the ground crew to guide the antenna away from the tower and ladder. Each guide rope's two loose ends should be held by the ground crew, so that the guide rope can be retrieved. Always use a nonconductive type of rope if working near power lines.

Attaching the Antenna to the Mast

When the antenna reaches the mast bracket, the four (4) 5" bolts should be inserted through the holes in the mast brackets and secured using 5/16"-18 lockwashers and nuts. Tighten all bolts securely. You may wish to use a deep well socket set to tighten these bolts.

Other Types Of Towers

When installing the Explorer 14 on a guyed tower, you may wish to use a different guide system. If you have insulators on your guy wires, you will need to keep the antenna away from the guy wires as well as the tower. You may wish to use two ropes attached together at the top of the tower and attached to the ground about 15 feet apart. These two ropes can then be used to slide the antenna on as it is also being lefted. The two ropes will need to be far enough from the tower base to allow some sag and still support the antenna away from the guy wires.

WARNING

Installation of this product near power lies is dangerous. For your safety, follow the instructions.

Lightning Protection

For proper lightning protection, you must ground your antenna supporting structure. Grounding will ensure noise-free operation and low SWR. A proper ground consists of a 1/2" x 8" copper clad steel ground rod driven into the ground approximately 12" away from the concrete tower base. Connect the tower to the ground rod using #8 copper wire and commercial noncorrosive ground clamps.

Attachment of Feedline

Use a good quality 50 ohm coaxial transmission line such as Times Wire and Cable RG-213/u or Belden 8214 (foam) or Belden 8237, 8267 or 9251 (solid). Take extra care when soldering connectors to foam dielectric coaxial cable. Weatherproof all connectors which will be exposed to rain or ice, with Coax-Seal® or another similar substance. There is **no** need to make the feedline any multiple of wavelengths long.

Attach the transmission line to the BN-86 balun and tighten the connector securely. Tape the coax to the boom and mast to ensure good strain relief.

VSWR Curves

These VSWR curves are typical for this antenna mounted 70 feet above the ground, horizontally polarized. Similar curves can be expected for this antenna mounted between 30 and 100 feet above the ground. **DO NOT TRY TO TUNE THIS ANTENNA FOR LOW VSWR AT GROUND LEVEL.** Higher VSWR can be expected if mounted at less than 30 feet or above a roof or large metallic structure. Forty (40) and eighty (80) meter wire dipoles should be kept at least 6 feet below this antenna.

Guy wires should be broken up into nonresonant lengths (less than 12 foot lengths) and insulated from the tower if mounted within 10 feet of the top of the tower.

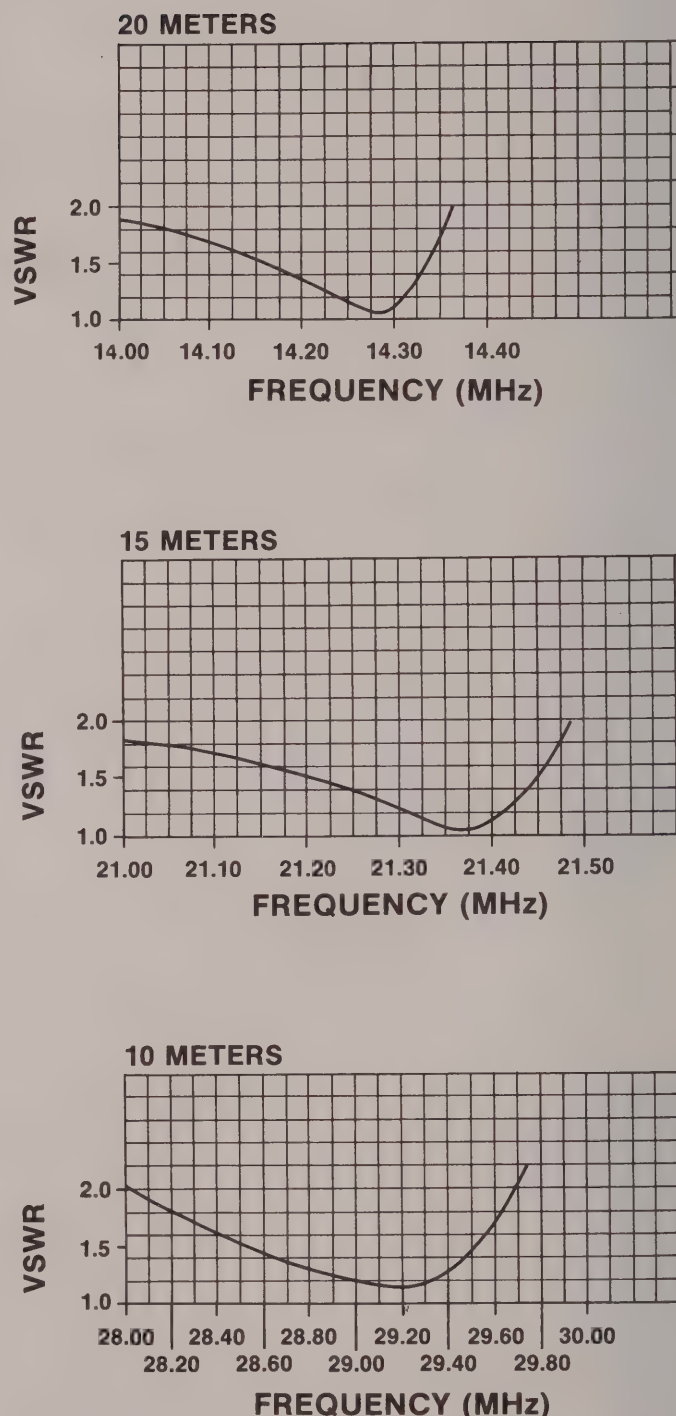


Figure 16
VSWR Charts

CHAPTER 4

Operation

Connect the other end of your transmission line to a good quality SWR meter or Thruline® wattmeter and then to your radio. While using lower power (less than 200 watts output), check the VSWR across each band from 14.0 to 29.7 MHz. Record this information for future reference. See Attachment 1 on the last page of this manual. Check the VSWR periodically to ensure proper operation.

The front-to-back ratio may be checked by using a steady carrier transmitted by a local station (at least a half mile away). The front-to-back ratio may be affected by the proximity of metallic structures or guy wires less than 10 feet below the antenna.

This completes your installation of the Explorer 14. Happy DX'ing!

Maintenance

The Explorer 14 antenna is designed to be relatively maintenance free. All hardware, except for seven (7) long bolts used in the boom-to-mast bracket, are made of passivated stainless steel. The seven (7) long bolts are plated with a thick layer of cadmium with a protective coating of clear chromate. The internal tooth-type lockwashers used in this antenna are made of a slightly magnetic grade of stainless steel. The element tubing clamps are made of all stainless steel. All other metallic parts are aluminum. All insulators are made of either black polyethylene or black Cyclocac®.

Hy-Gain now recommends genuine Penetrox-A® from Burndy Corporation for use as an anti-electrolytic compound within element assemblies. This prevents aluminum oxide from forming on the aluminum surface, thereby maintaining high electrical conductivity between element sections, especially in coastal environments. No other type of conductive paste should be used. Penetrox-A® may be obtained from any electrical supply store.

A light amount of clear lacquer or an acrylic spray may be used to coat the exterior surface of the element assemblies if heavy oxidation is likely to occur. Do not use any coating on trap assemblies. Heavy oxidation of aluminum may occur if the antenna is installed within 5 miles of salt water.

When storing this antenna (or if awaiting installation), care should be taken not to damage any trap assembly or allow any dirt or insects to enter any trap assembly. Do not leave the elements in a grassy area, as wet grass will stain the aluminum.

Optional Balun

If you use a 1500 watt continuous duty power amplifier or if you use RTTY at 1500 watts on this antenna, the BN-86 balun should be replaced with a suitable high power balun or RF choke. Hy-Gain makes a new high-power current-type balun rated at 2000 watts continuous, Model /BN-4000B for beams.

Thruline® is a registered trademark of Bird Electronics.

Cyclocac® is a registered trademark of Borg-Warner.

Penetrox-A® is a registered trademark of Burndy Corporation.

CHAPTER 5

Troubleshooting

If you encounter problems with the operation of your Explorer 14, follow these steps to isolate the cause.

Usually you can isolate problems that occur in either your antenna or feedline/feedpoint.

If you experience high VSWR on all bands, your problem is probably in the feedline or balun. If you experience high VSWR on some bands but not all bands, look for problems in the antenna element lengths or traps or nearby resonant structures.

SYMPTOM	POSSIBLE CAUSES
Consistently high VSWR on all bands.	<p>Balun damaged by lightning or excessive power.</p> <p>Shorted coaxial connector.</p> <p>Water inside of balun or transmission line.</p>
High VSWR dependent upon direction of beam.	<p>Resonant guy wires too close to antenna.</p> <p>Metallic structures or wiring too close to antenna.</p>
Intermittent high VSWR not dependent on weather or power level or direction of beam or band selection.	<p>Loose connection on feed system, matching system or transmission line.</p>
High VSWR after rainshowers or with high humidity.	<p>Trap(s) installed with drain holes up instead of down.</p> <p>Water inside of coax or connector.</p> <p>DE-2 tubing section installed with slot up instead of down.</p> <p>Balun installed incorrectly (tipped down on front end).</p>
High VSWR with High power, Low VSWR with Low power.	<p>Balun damaged or defective.</p>
Low VSWR, but only near band edge(s).	<p>Loose coaxial connection on transmission line.</p>
High VSWR on only one or two bands.	<p>Trap(s) damaged or defective.</p> <p>Resonant guy wires or nearby metallic structure.</p> <p>Another HF antenna too close.</p> <p>Antenna not assembled correctly.</p>

CHAPTER 6

Service Information

If you are unable to resolve technical problems, you should contact the Telex/Hy-Gain Customer Service Department in Minneapolis, Minnesota.

You should fully research your problem by going through the Troubleshooting Guides in Chapter 5 before you contact the Customer Service Department. You should also record your VSWR across all three bands before calling.

You should retain your sales receipt or other proof of purchase for antennas that are still under warranty. (See separate sheet for Telex Warranty.)

All requests, inquiries or warranty claims should be made to:

Amateur Department
Telex Communications, Inc.
9600 Aldrich Avenue South
Minneapolis, MN 55420
Phone: (612) 884-4051 or (612) 887-5528

For ordering replacement parts, contact:

Telex/Hy-Gain
Telex Communications, Inc.
8601 East Cornhusker Highway
P.O. Box 5579
Lincoln, NE 68505-5579
ATTN: Customer Service Department
Phone: (402) 467-5321 or (402) 465-7022

PARTS LIST

Item No.	Part No.	Description	Qty
1	102734	Bracket, cast aluminum.....	2
2	172735	Bracket, casting-to-boom.....	1
3	172732	Clamp, boom-to-bracket.....	1
4	163764	Bracket, element-to-boom, #4	2
5	165919	Bracket, element-to-boom, #13	8
6	165920	Bracket, element-to-boom, #14	2
7	871098	Tube Assembly, aluminum, 1 1/4" x 83", R1, DE-1	4
8	190314	Tube, aluminum, 1 1/8", x 54", swaged, R2	2
9	171153	Tube, aluminum, 7/16" x 37", R3, DE-3	4
10	190206	Tube, aluminum, 7/8" x 55", swaged, R2-1.....	2
11	190006	Tube, aluminum, 5/8" x 26", swaged, R2-2.....	2
12	175512	Tube, aluminum, 7/16" x 42 3/4", R2-3	2
13	190000	Tube, aluminum, 5/8" x 48", swaged, RS-1, FS-1	4
14	172928	Tube, aluminum, 7/16" x 53"	4
15	190309	Tube, aluminum, 1 1/8" x 42", swaged, DE-2.....	2
16	190900	Tube, aluminum, 1 1/4" x 48", D1.....	2
17	190313	Tube, aluminum, 1 1/8" x 30", swaged, D2.....	2
18	190606	Tube, aluminum, 1" x 6", D3	2
19	178558	Tube, aluminum, 7/16" x 28", D4.....	2
20	178411	Tube, aluminum, 2" x 83 3/4", drilled, (boom tube)	2
21	170482	Tube, aluminum, 3/4" x 60", (beta tube)	2
28	465833	Insulator, 1 1/4" I.D., dirven element	2

PARTS LIST (continued)

Item No.	Part No.	Description	Qty
	872221	Parts Pack, 395S, Insulators.....	1
22	455644	Caplug, 7/16", black	12
23		(NOT USED)	
24	455625	Caplug, 2", black.....	2
25	461057	Insulator, 5/8", I.D., front and rear sleeves.....	4
26	465595	Insulator, beta support (bottom)	1
27	465600	Insulator, beta support (top)	1
29	470486	Insulator, open-sleeve spacer	4
	872222	Parts Pack, 395S, Straps	1
30	168695	Clamp, tubing, 1 1/4"	6
31	171329	Clamp, tubing, 5/8"	8
32	170483	Strap, boom jumper	2
33	171077	Strap, boom-to-beta, 2" I.D.	1
34	171131	Sleeve, beta shorting.....	1
35	171162	Strap, beta shorting, 3/8" radius	2
36	177888	Clamp, beta support	1
37	871508	"Pigtail" wire, 7"	4
	878682	Parts Pack, 395S, Clamps	1
38	358756	Clamp, tubing #6, stainless steel.....	14
39	358757	Clamp, tubing #10, stainless steel.....	10
40		(NOT USED)	
41	358758	Clamp, tubing #16, stainless steel.....	6
42	541363	U-bolt, #10-24 x 2 1/2" x 2 3/4"	1
	872224-1	Parts Pack, 395S, 1/4" Hardware	1
43	500156	Bolt, 1/4"-20 x 3/8", hex head, stainless steel	14
44	505266	Bolt, 1/4"-20 x 3/4", hex head, stainless steel	56
45	506518	Bolt, 1/4"-20 x 1 1/4", hex head, stainless steel	6
46	504098	Bolt, 1/4"-20 x 1 1/2", hex head, stainless steel	2
47	505763	Bolt, 1/4"-20 x 1 3/4", hex head, stainless steel	2
48	562961	Lockwasher, internal, 1/4", stainless steel	72
49	554099	Nut, hex, 1/4"-20, stainless steel	18
50	551367	Nut, square, 1/4"-20, stainless steel.....	18
	872225-1	Parts Pack, 395S, #10 and 5/16" Hardware	1
51	500160	Bolt, #10-24 x 5/8", hex head, stainless steel	4
52	504069	Bolt, #10-24 x 1", hex head, stainless steel.....	10
53	500159	Bolt, #10-24 x 1 1/2", hex head, stainless steel	2
54	500157	Bolt, #10-24 x 2", hex head, stainless steel.....	2
55	565697	Lockwasher, internal, #10, stainless steel.....	28
56	554071	Nut, #10-24, hex, stainless steel	24
57	555792	Nut, #10-24, square, stainless steel.....	2
58	506968	Bolt, 5/16"-18 x 2 3/4", hex head, stainless steel.....	2

PARTS LIST (continued)

Item No.	Part No.	Description	Qty
59	500392	Bolt, 5/16"-18 x 3", hex head, stainless steel	2
60	500349	Bolt, 5/16"-18 x 5", hex head, stainless steel	4
61	564792	Lockwasher, split, 5/16", stainless steel.....	13
62	555747	Nut, 5/16"-18, hex, stainless steel	9
63	873424	Balun, BN-86	1
64	878637	Trap, 15M, driven element.....	2
65	878694	Trap, 15M	4
66	878749	Trap, 10M	2
67	850050	Coax-Seal ®.....	1
68	691138	Rope, 12 ft., black poly	1

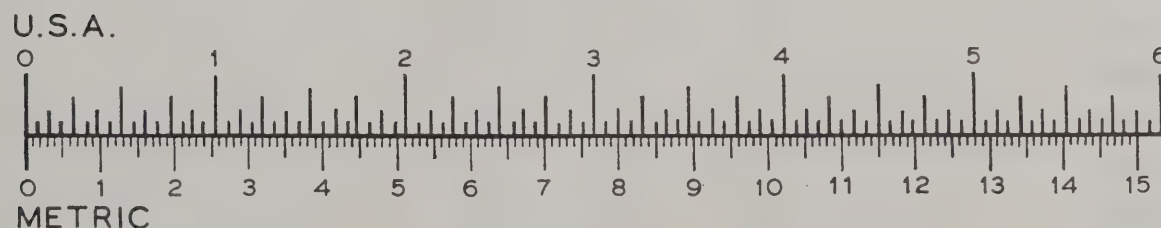
Converting American Measurements To Metric

Use this scale to identify lengths of bolts, diameters of tubes, etc. The American inch (1") and foot (1') can be converted to centimeters in this way.

1 inch (1") = 2.54 cm
1 foot (1') = 30.48 cm

Example:

42" x 2.54 = 106.7 cm



VSWR RECORD

Type of VSWR Meter _____

	Date _____	Date _____	Date _____
Frequency	VSWR	VSWR	VSWR
14.00	_____	_____	_____
14.10	_____	_____	_____
14.20	_____	_____	_____
14.30	_____	_____	_____
14.35	_____	_____	_____
21.00	_____	_____	_____
21.10	_____	_____	_____
21.20	_____	_____	_____
21.30	_____	_____	_____
21.40	_____	_____	_____
21.45	_____	_____	_____
28.00	_____	_____	_____
29.25	_____	_____	_____
29.50	_____	_____	_____
28.75	_____	_____	_____
29.00	_____	_____	_____
29.25	_____	_____	_____
29.50	_____	_____	_____
29.70	_____	_____	_____

Height of Antenna: _____

Typed of antennas or guy wires
also attached to same tower: _____

NOTES:

Please record the following information for your records.

Date of Purchase: _____

Purchased From: _____

Price Paid: _____

Please retain your copy of the Bill-of-Sale for warranty claims.

TELEX[®] *hy-gain*[®]

TELEX COMMUNICATIONS, INC.

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